
Transportation Impact Analysis

123 Independence Drive Residential Project City of Menlo Park

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Prepared for:

CITY OF MENLO PARK

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Executive Summary

Dudek has prepared this Transportation Impact Analysis (TIA) to identify traffic impacts associated with the proposed 123 Independence Drive Residential project (proposed project or project), a residential development in the City of Menlo Park (City), in San Mateo County (County). This TIA has been prepared per the City of Menlo Park Transportation Impact Analysis (TIA) Guidelines (2020) and its scope of analysis has been approved by the City's Transportation Division. In addition, this TIA complies with the City of Menlo Park General Plan Circulation Element requirements, and with the San Mateo County Congestion Management Program (CMP) 2019 for the City/County Association of Governments of San Mateo County (C/CAG).

The project would include demolition of five existing office and industrial buildings, and the construction of 116 townhomes and 316 rental apartments, for a total of 432 dwelling units. Based on trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation*, 11th Edition (2021), the proposed project would generate, after the application of the 20 percent reduction as required by the Transportation Demand Management (TDM) plan, 1,774 daily trips, 131 AM peak hour trips (31 inbound and 100 outbound), and 146 PM peak hour trips (90 inbound and 56 outbound). After subtracting for the existing land uses, the proposed project's net trip generation would be 870 daily trips, 38 AM peak hour trips (-43 inbound and 81 outbound), and 53 PM peak hour trips (70 inbound and -17 outbound).

The TIA evaluated vehicle miles traveled (VMT) and estimated that the City's VMT threshold would be above the threshold for residential uses, however with the required application of the TDM plan, the project's VMT would below the City's threshold for residential uses. Therefore, the VMT generated by the project would result in a less than significant impact.

The project would provide driveways within each of the four proposed building lots, and would provide access from Independence Drive, Chrysler Drive, Jefferson Drive, with the parking garage entrance along Constitution Drive. Based on the results of the gate stacking analysis, there is adequate distance. Additionally, based on the vehicular queuing analysis for project driveways, vehicle storage lengths would be accommodated within all available storage lanes. Emergency access would be provided and maintained through project driveways and access through several emergency vehicle only easements. All existing pedestrian and bicycle facilities would not be impacted by the project.

The project would provide a total of 552 parking spaces for 432 dwelling units (510 parking spaces for residents and 42 parking spaces for guests), totaling approximately 1.3 spaces per unit. Therefore, the project would meet the City's parking requirements.

This TIA includes the assessment of study intersections within the study area of the proposed project. These facilities were analyzed under the Existing, Near-Term (2025), Near-Term (2025) plus Project, Cumulative (2040), and Cumulative (2040) plus Project conditions.

Per the City of Menlo Park TIA Guidelines and analysis criteria, the following roadway improvements are recommended to achieve satisfactory levels of service and/or reduce delay increases to pre-project conditions or better. Improvements at some locations may not be feasible due to right-of-way constraints. Chapter 5.4 contains a detailed discussion of these improvements.

Study Intersections

Existing Conditions

As discussed in Chapter 5.1, all of the study area intersections are currently operating at satisfactory levels of service (LOS D or better) under existing conditions per City standards, with the exception of the following intersections:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM peak hour (*signalized*)
- #9 (Chrysler Drive/Constitution Drive) – LOS E in AM peak hour (*signalized*)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour; LOS E in PM peak hour (*unsignalized*)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (*signalized*)
- #15 (University Avenue/Bayfront Expressway) – LOS F in PM peak hour (*signalized*)

Near-Term (2025) plus Project Conditions

Under Near-Term (2025) plus Project conditions, the following intersections would exceed the thresholds identified in the City's TIA guidelines and increase the average critical movement delay by 0.8 seconds or more during AM and/or PM peak hours:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM and PM peak hours (*signalized*)
- #9 (Chrysler Drive/Constitution Drive) – LOS F in AM peak hour; LOS E in PM peak hour (*signalized*)
- #10 (Chrysler Drive/Jefferson Drive – East Driveway) – LOS F in AM peak hour (*unsignalized*)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour; LOS E in PM peak hour (*unsignalized*)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (*signalized*)

The Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant was performed at the unsignalized intersections (#10 and #11) and is not met in either peak hour. However, as noted in Table 10, signalization is included as part of the noted TIF projects at these intersections in the City of Menlo Park TIF Nexus Study.

Recommendations

A summary of recommended improvements at the intersections identified above is provided in Table 10 and summarized below:

- #1 (Marsh Road/Bayfront Expressway)
 - Modify signal phasing for eastbound right-turning movements to overlap phasing
- #9 (Chrysler Drive/Constitution Drive)
 - Widen and reconfigure eastbound approach to one eastbound left-turn lane, one eastbound through lane, and one eastbound right-turn lane
- #10 (Chrysler Drive/Jefferson Drive – East Driveway)
 - Install a traffic signal (included in TIF Nexus Study)
- #11 (Chrysler Drive/Independence Drive)
 - Install a traffic signal (included in TIF Nexus Study)

- #14 (Willow Road/Bayfront Expressway)
 - Widen the eastbound approach with an additional through lane. Widen the northbound approach with an additional left-turn lane. These physical improvements would not be feasible.
 - Therefore, there are no feasible physical improvements possible (improvements in the TIF Nexus Study include adaptive traffic signal coordination along the Bayfront Expressway corridor which is likely to improve LOS operations)

Cumulative (2040) plus Project Conditions

Under Cumulative (2040) plus Project conditions, the following intersections would exceed the thresholds identified in the City's TIA guidelines and increase the average critical movement delay by 0.8 seconds or more during AM and/or PM peak hours:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM peak hour; LOS F in PM peak hour (signalized)
- #9 (Chrysler Drive/Constitution Drive) – LOS F in AM and PM peak hours (signalized)
- #10 (Chrysler Drive/Jefferson Drive – East Driveway) – LOS F in AM peak hour; LOS E in PM peak hour (unsignalized)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour (unsignalized)
- #13 (Chilco Street/Constitution Drive) – LOS F in AM and PM peak hours (signalized)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (signalized)

The Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant was performed at the unsignalized intersections (#10 and #11) and is not met in either peak hour as with Near-Term (2025) conditions. However, as noted in Table 10, signalization is included as part of the noted TIF projects at these intersections in the City of Menlo Park TIF Nexus Study.

Recommendations

The same improvement measures noted under Near-Term (2025) plus Project conditions are recommended for incompliant intersections noted above, where overlap occurs. A summary of any additional improvements warranted under Cumulative (2040) plus Project conditions is provided in Table 10 and summarized below:

- #13 (Chilco Street/Constitution Drive)
 - Widen and reconfigure eastbound approach to one eastbound left-turn lane, one eastbound through lane, and one eastbound right-turn lane
 - Widen and reconfigure westbound approach to one westbound left-turn lane, one westbound through lane, and one westbound right-turn lane
 - Modify signal phasing for east and westbound left-turning movements to protected-permitted phasing
 - The project's fair share percentage is approximately 0.54%

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1 Introduction

1.1 Purpose and Scope

The purpose of this TIA is to identify traffic impacts associated with the proposed 123 Independence Drive residential project (proposed project or project) in the City of Menlo Park (City), in San Mateo County (County). This TIA has been prepared per the City of Menlo Park Transportation Impact Analysis (TIA) Guidelines (2020) and its scope of analysis has been approved by the City's Transportation Division. In addition, this TIA complies with the City of Menlo Park General Plan Circulation Element requirements, and with the San Mateo County Congestion Management Program (CMP) 2019 for the City/County Association of Governments of San Mateo County (C/CAG).

The objectives of this TIA are to:

- Document existing roadway, pedestrian, bicycle, transit and traffic conditions, including intersection levels of service (LOS) in the study area;
- Estimate trip generation, distribution, and assignment characteristics for the proposed project;
- Provide a Vehicle Miles Traveled (VMT) analysis per SB 743, the updated California Environmental Quality Act (CEQA) Guidelines, and the City of Menlo Park TIA Guidelines;
- Incorporate the transportation demand management (TDM) plan as required per City Ordinance to reduce at least twenty percent (20%) of net new vehicular trips;
- Determine LOS for study area intersections under: 1) Existing; 2) Near-Term (2025); 3) Near-Term (2025) plus Project; 4) Cumulative (2040); and 5) Cumulative (2040) plus Project conditions;
- Identify operational improvements needed to meet LOS standards;
- Identify CEQA-required mitigation measures for significant transportation impacts and/or other improvements needed to meet LOS standards (if any); and,
- Provide findings and recommendations based on the traffic analysis of the proposed project.

1.2 Project Description and Location

The proposed project would include demolition of five existing office and industrial buildings (a total of approximately 103,900 square feet of building space); alteration of the existing parcel boundaries to create five new lots, including four building lots (A, B, C, and D) and one open space lot (Lot 1); construction of 116 for-sale townhomes and 316 rental apartments, along with associated parking and landscaping; and provision of a wide pedestrian walkway (referred to in the site plans and throughout this EIR as a "paseo") from Constitution Drive to Independence Drive, as shown on Figure 1, Proposed Site Plan.

The townhomes would be constructed on the southern half of the project site, adjacent to Independence Drive, to be located on Lots B, C, and D. These lots would contain a total of 116 three-story townhomes with one or two-car garages that would be oriented to public streets, internal streets, and internal pedestrian pathways. On Lot A, which would comprise the northern portion of the project site, the proposed project would construct a five-story apartment building fronting on Constitution Drive. This building would include 316 apartments providing approximately 224,863 gross square feet of residential uses. The ground floor level of the apartment building would also include a leasing office, two

mail rooms, a co-working space, a pet spa, and two lobbies. The second floor would include a fitness room and clubhouse. The third floor would include an approximately 648-square-foot amenity space, for which the specific use or function has not yet been defined. The fifth floor would include an approximately 588-square-foot lounge. The total size of the building, excluding parking, would be 189,223 square feet. Parking for residents would be provided in a parking structure located interior to the building, with one level of parking on the ground-floor level and one level below grade. Two interior courtyards would be placed at the second-floor level, above the parking structure. The parking structure would contain 128,880 square feet of vehicular parking space and have a total of 151,626 square feet (inclusive of bicycle parking, trash enclosures, fans, and other mechanical space).

The five parcels within the project site currently contain approximately 280 existing parking spaces, with vehicle access from Independence, Chrysler, and Constitution Drives. There is limited pedestrian infrastructure in the project area. Sidewalks exist on the east side of Chrysler Drive, but on the west side a sidewalk is present only along the southern portion of 1205 Chrysler Drive. Similarly, there are sidewalks along the south side of Independence Drive, but none are present on the north side, adjacent to the project site. A short segment of sidewalk is present along the frontage of 110 and 120 Constitution Drive, but no sidewalks are present at 130 Constitution Drive or farther east along Constitution Drive.

Regional access to the proposed project is provided via U.S. Route 101 (US-101 or Highway 101) and its interchange with Marsh Road – State Route 84 (SR-84) to the west, as well as via SR-84 – Bayfront Expressway and its intersection Chrysler Drive to the north. The proposed project would provide for vehicular circulation within each of the four proposed building lots, as shown on Figure 3-6, Proposed Circulation. Lot B would be accessed from Independence Drive and streets within this lot would not be connected with the adjacent Lot C other than by an emergency vehicle access route crossing the paseo. Lot C would each have one 26-foot-wide access driveway off Independence Drive and Lot D would have one 26-foot-wide, access driveway off Chrysler Drive. Streets within Lots C and D would be interconnected Lot A would have a single driveway off Constitution Drive providing access into the parking garage. Emergency vehicles would have access through the project site from Constitution Drive into the site, then along Street A located at the northern end of Lots C and D, connecting to Chrysler Drive. Internal streets that would provide emergency vehicle access would be 26 feet wide while other internal streets and driveways would be 20 feet wide.



SOURCE: Studio T Square 2022

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1.3 Analysis Methodology

1.3.1 Vehicle Miles Traveled Analysis for CEQA

On September 27, 2013, Senate Bill (SB) 743 was signed into law, which creates a process to change the way that transportation impacts are analyzed under California Environmental Quality Act (CEQA). SB 743 required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to level of service (LOS) for evaluating transportation impacts. Under the new transportation guidelines, LOS, or vehicle delay, will no longer be considered an environmental impact under CEQA. OPR recommended Vehicle Miles Traveled (VMT) as the most appropriate measure of project transportation impacts for land use projects and land use plans. The updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018.

Under these guidelines, VMT has been adopted as the most appropriate measure of transportation impacts under CEQA. The OPR's regulatory text indicates that a public agency may immediately commence implementation of the new transportation impact guidelines, and that the guidelines must be implemented statewide by July 1, 2020. The Updated CEQA Guidelines state that *"...generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts..."* and define VMT as *"...the amount and distance of automobile travel attributable to a project..."*. It should be noted that "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT). Other relevant considerations may include the effects of the project on transit and non-motorized travel.

The City of Menlo Park City Council approved the VMT thresholds and incorporated them the City's TIA Guidelines on June 16, 2020; therefore, this analysis follows these guidelines for SB 743 compliance. Per the City's guidelines, projects shall analyze VMT metrics when exemption criteria are not met. The details of applicable screening and VMT analysis methodology is provided in Section 4 of this TIA.

1.3.2 Level of Service Analysis for General Plan Consistency

In addition to a VMT analysis required under CEQA, a local agency may require a TIA to include an LOS analysis to identify infrastructure improvements required to provide acceptable operations, consistent with the acceptable LOS in the local agency's General Plan. Although the City of Menlo Park adopted VMT thresholds into their TIA Guidelines, the City continues to require LOS analysis for conformance with their General Plan. LOS is commonly used as a quantitative description of intersection operations and roadway segments and is based on the design capacity of the intersection configuration and roadway facility, compared to the volume of traffic using the facility.

Transportation conditions are analyzed in this TIA for the following scenarios:

Existing Conditions

The TIA includes a description of existing traffic conditions in the site vicinity, including existing intersection weekday AM and PM peak hour traffic volumes, and traffic operations. The existing condition is representative of the year 2022. Signal timing information and existing traffic volumes were obtained from City staff. Counts were previously collected in 2019 and provided in 2020 (within the PTV Vistro files given by the City) and therefore, have been adjusted as needed with 2% per year growth to represent 2022 conditions.

Near Term (2025) Conditions

This scenario includes a description of traffic conditions and operations within a short-term horizon period (less than 5 years) where the proposed project is constructed and fully occupied. Near Term 2025 traffic volumes were also provided by the City's traffic modeler (Hexagon Transportation Consultants, Inc.) and includes a calculation of near-term traffic volumes using the City's Travel Demand Model.

Near Term (2025) plus Project Conditions

This scenario includes analysis of traffic operations under the Near Term 2025 condition (described above) with project-related traffic added to the AM and PM peak hour traffic volumes. The traffic impacts specific to the project under this condition were used as the basis for determining the project's contribution to short-term impacts.

Cumulative (2040) Conditions

This scenario includes a description of traffic conditions and operations within a long-term horizon period to account for transportation network changes throughout the region, as well as population growth, developed or approved or pending development projects, and buildout of the land uses designated in the City's General Plan. Traffic volumes were provided by the City's traffic modeler (Hexagon) and utilized the City's Travel Demand Model for the year 2040.

Cumulative (2040) plus Project Conditions

This condition includes analysis of traffic operations under the Cumulative (2040) Condition (described above) with project-related traffic added to the AM and PM peak hour traffic volumes. The traffic impacts specific to the project under this condition were used as the basis for determining the project's contribution to cumulative impacts.

1.3.2.1 Intersections

The Highway Capacity Manual, 6th Edition (HCM 6) methodology (Transportation Research Board 2016) was used to assess level of service for intersections within the study area per requirement of the respective jurisdiction.

The HCM intersection analysis methodology was used to analyze the operation of signalized and unsignalized study intersections. The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding control delay experienced per vehicle for unsignalized intersections. The PTV Vistro software was used to determine intersection LOS. PTV Vistro is consistent with the HCM 6 methodology. Table 1 shows the LOS values by delay ranges for unsignalized and signalized intersections under the HCM methodology.

Table 1. Levels of Service for Intersections using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds per vehicle)	Signalized Intersections Control Delay (in seconds per vehicle)
A	< 10.0	< 10.0
B	> 10.0 to < 15.0	> 10.0 to < 20.0
C	> 15.0 to < 25.0	> 20.0 to < 35.0

Table 1. Levels of Service for Intersections using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds per vehicle)	Signalized Intersections Control Delay (in seconds per vehicle)
D	> 25.0 to < 35.0	> 35.0 to < 55.0
E	> 35.0 to < 50.0	> 55.0 to < 80.0
F	> 50.0	> 80.0

Source: HCM 6 (Transportation Research Board 2016).

Study Intersections

Based on the City of Menlo Park TIA Guidelines, the TIA study area was determined to include the intersections listed below. Figure 2 shows the project location and intersections within the study area, and their respective jurisdictions.

Intersections

1. Marsh Road/SR-84 – Bayfront Expressway (Caltrans)
2. Marsh Road/US-101 northbound off-ramp (Caltrans)
3. Marsh Road/US-101 southbound off-ramp (Caltrans)
4. Marsh Road/Scott Drive (Menlo Park)
5. Marsh Road/Bay Road (Menlo Park)
6. Marsh Road/Middlefield Road (Atherton)
7. Marsh Road/Florence Street-Bohannon Drive (Menlo Park)
8. Chrysler Drive/SR-84 – Bayfront Expressway (Caltrans)
9. Chrysler Drive/Constitution Drive (Menlo Park)
10. Chrysler Drive/Jefferson Drive (Menlo Park)
11. Chrysler Drive/Independence Drive (Menlo Park)
12. Chilco Street/SR-84 – Bayfront Expressway (Caltrans)
13. Chilco Street/Constitution Drive (Menlo Park)
14. Willow Road/SR-84 – Bayfront Expressway (Caltrans)
15. University Avenue/SR-84 – Bayfront Expressway (Caltrans)

1.3.2.2 San Mateo County Congestion Management Program

Per the San Mateo CMP and C/CAG, new developments that add trips to the CMP network must be evaluated for transportation impacts. C/CAG recognizes that SB 743 requires VMT as the primary metric for traffic impacts under CEQA and indicates that future CMT legislation will be amended. However, as updated legislation is not currently available, C/CAG continues to require use of a delay-based metric (LOS) to measure roadway performance. Since the proposed project would generate fewer than 100 peak hour trips, no CMP segment analysis is required.

1.3.2.3 General Plan Consistency Requirements

Transportation-related policies are included in the Circulation Element of the Menlo Park General Plan. This section was added to the General Plan to provide framework for transportation planning within the city and was most recently updated in 2016 when the City updated its Land Use and Circulation Elements (commonly referred to as ConnectMenlo). The framework is based on existing practices and future considerations in land use, population, and regional transportation. The General Plan Circulation Element establishes a vision for the city with goals related to sustainability, reliability, and safety for all modes of transportation. The transportation goals for Menlo Park that relate to the proposed project include:

City of Menlo Park General Plan Circulation Element

The City of Menlo Park General Plan Circulation Element contains the following policies and programs related to transportation compliance and LOS requirements:

GOAL CIRC-3: Increase mobility options to reduce traffic congestion, greenhouse gas emissions, and commute travel time.

Policy CIRC-3.4: Level of Service. Strive to maintain LOS D at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood Avenue and Middlefield Road and at intersections along Willow Road from Middlefield Road to Highway 101. The City shall work with Caltrans to ensure that the average stopped delay on local approaches to State-controlled signalized intersections does not exceed LOS E.

Program CIRC-3.A: Transportation Impact Metrics. Supplement VMT and greenhouse gas emissions per service population (or other efficiency metric) metrics with LOS in the transportation impact review process, and utilize LOS for identification of potential operational improvements, such as traffic signal upgrades and coordination, as part of the Transportation Master Plan.

City of Menlo Park Transportation Impact Analysis Guidelines

Per the City of Menlo Park TIA guidelines:

- A project is considered potentially noncompliant with local policies if the addition of project traffic causes an intersection on a collector street operating at LOS “A” through “C” to operate at an unacceptable level (LOS “D,” “E” or “F”) or have an increase of 23 seconds or greater in average vehicle delay, whichever comes first.
- Potential non-compliance shall also include a project that causes an intersection on arterial streets or local approaches to State-controlled signalized intersections operating at LOS “A” through “D” to operate at an unacceptable level (LOS “E” or “F”) or have an increase of 23 seconds or greater in average vehicle delay, whichever comes first.
- A project is also considered potentially non-compliant if the addition of project traffic causes an increase of more than 0.8 seconds of average delay to vehicles on all critical movements for intersections operating at a near-term LOS “D” through “F” for collector streets and at a near-term LOS “E” or “F” for arterial streets.

- For local approaches to State-controlled signalized intersections, a project is considered to be potentially non-compliant if the addition of project traffic causes an increase of more than 0.8 seconds of delay to vehicles on the most critical movements for intersections operating at a near-term LOS “E” or “F.”

City of Atherton General Plan Circulation Element

The City of Atherton General Plan Circulation Element contains the following policies and programs related to transportation compliance and LOS requirements:

Goal CIR-5: To achieve a high quality of roadway operation on all Atherton streets.

Policy CIR-5.1: Atherton’s minimum acceptable intersection level of service standards are listed below.

- Highways: LOS E
- Minor Arterials and Collectors: LOS D
- Local Streets: LOS C

1.3.3 General Plan and Master Plan Consistency (non-LOS criteria)

Goals, plans, and policies included in the City of Menlo Park Transportation Master Plan (2020b)) are included below to evaluate the project’s potential impacts to non-LOS related criteria, including impacts to pedestrians, bicyclists, and transit users.

Goal CIRC-1: Provide and maintain a safe, efficient, attractive, user-friendly circulation system that promotes a healthy, safe, and active community and quality of life throughout Menlo Park.

Policy CIRC-1.7: **Bicycle Safety.** Support and improve bicyclist safety through roadway maintenance and design efforts.

Policy CIRC-1.8: **Pedestrian Safety.** Maintain and create a connected network of safe sidewalks and walkways within the public right of way ensuring that appropriate facilities, traffic control, and street lighting are provided for pedestrian safety and convenience, including for sensitive populations.

Goal CIRC-2: Increase accessibility for and use of streets by pedestrians, bicyclists, and transit riders.

Policy CIRC-2.1: **Accommodating All Modes.** Plan, design and construct transportation projects to safely accommodate the needs of pedestrians, bicyclists, transit riders, motorists, people with mobility challenges, and persons of all ages and abilities.

Policy CIRC-2.2: **Livable Streets.** Ensure that transportation projects preserve and improve the aesthetics of the city.

Policy CIRC-2.3: **Street Classification.** Utilize measurements of safety and efficiency for all travel modes to guide the classification and design of the circulation system, with an emphasis on providing “complete streets” sensitive to neighborhood context.

Policy CIRC-2.4: **Equity.** Identify low-income and transit-dependent districts that require pedestrian and bicycle access to, from, and within their neighborhoods.

Policy CIRC-2.7: **Walking and Biking.** Provide for the safe, efficient, and equitable use of streets by pedestrians and bicyclists through appropriate roadway design and maintenance, effective traffic law enforcement, and implementation of the City's Comprehensive Bicycle Development Plan and the El Camino Real/Downtown Specific Plan.

Policy CIRC-2.8: **Pedestrian Access at Intersections.** Support full pedestrian access across all legs of signalized intersections.

Policy CIRC-2.9: **Bikeway System Expansion.** Expand the citywide bikeway system through appropriate roadway design, maintenance, effective traffic law enforcement, and implementation of the City's Comprehensive Bicycle Development Plan, and the El Camino Real/Downtown Specific Plan.

Policy CIRC-2.10: **Green Infrastructure.** Maximize the potential to implement green infrastructure by: a) Reducing or removing administrative, physical, and funding barriers; b) Setting implementation priorities based on stormwater management needs, as well as the effectiveness of improvements and the ability to identify funding; and c) Taking advantage of opportunities such as grant funding, routine repaving or similar maintenance projects, funding associated with Priority Development Areas, public private partnerships, and other funding opportunities.

Policy CIRC-2.11: **Design of New Development.** Require new development to incorporate design that prioritizes safe pedestrian and bicycle travel and accommodates senior citizens, people with mobility challenges, and children.

Policy CIRC-2.14: **Impacts of New Development.** Require new development to mitigate its impacts on the safety (e.g., collision rates) and efficiency (e.g., VMT per capita) of the circulation system. New development should minimize cut-through and high-speed vehicle traffic on residential streets; minimize the number of vehicle trips; provide appropriate bicycle, pedestrian, and transit connections, amenities and improvements in proportion with the scale of proposed projects; and facilitate appropriate or adequate response times and access for emergency vehicles.

Goal CIRC-3: Increase mobility options to reduce traffic congestion, greenhouse gas emissions, and commute travel time.

Policy CIRC-3.1: **Vehicle Miles Traveled.** Support development and transportation improvements that help reduce per capita vehicle miles traveled.

Policy CIRC-3.2: **Greenhouse Gas Emissions.** Support development, transportation improvements, and emerging vehicle technology that help reduce per capita greenhouse gas emissions.

Policy CIRC-3.4: **Level of Service.** Strive to maintain level of service (LOS) D at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood Avenue and Middlefield Road and at intersections along Willow Road from Middlefield Road to US 101. The City shall work with Caltrans to ensure that average stopped delay on local approaches to State-controlled signalized intersections does not exceed LOS E.

Goal CIRC-4: Improve Menlo Park's overall health, wellness, and quality of life through transportation enhancements.

Policy CIRC-4.1: **Global Greenhouse Gas Emissions.** Encourage the safer and more widespread use of nearly zero-emission modes, such as walking and biking, and lower emission modes like transit, to reduce greenhouse gas emissions.

Policy CIRC-4.2: **Local Air Pollution.** Promote non-motorized transportation to reduce exposure to local air pollution, thereby reducing risks of respiratory diseases, other chronic illnesses, and premature death.

Policy CIRC-4.3: **Active Transportation.** Promote active lifestyles and active transportation, focusing on the role of walking and bicycling, to improve public health and lower obesity.

Policy CIRC-4.4: **Safety.** Improve traffic safety by reducing speeds and making drivers more aware of other roadway users.

Goal CIRC-6: Provide a range of transportation choices for the Menlo Park community.

Policy CIRC-6.1: **Transportation Demand Management.** Coordinate Menlo Park's transportation demand management efforts with other agencies providing similar services within San Mateo and Santa Clara Counties.

Policy CIRC-6.4: **Employers and Schools.** Encourage employers and schools to promote walking, bicycling, carpooling, shuttles, and transit use.

Menlo Park Municipal Code

The proposed project is located in the Residential Mixed Use (R-MU) zoning district. The Zoning Ordinance requires development and implementation of a Transportation Demand Management (TDM) plan:

Chapter 16.45.090 Transportation Demand Management. As stated in Chapter 16.45.090 of the City's Zoning Ordinance, all new construction, regardless of size, and building additions of 10,000 or more square feet of gross floor area, or a change of use of 10,000 or more square feet of gross floor area shall develop a TDM plan to reduce associated vehicle trips to at least 20 percent below standard generation rates for uses on the individual project site. Each individual applicant is required to prepare its own TDM plan and provide an analysis to the satisfaction of the City's Transportation Manager of the impact of that TDM program.

The TDM Program Guidelines (July 2015) provide options for project applicants to mitigate the traffic impacts of new developments. The guidelines include an extensive list of TDM measures accompanied with the number of trips credited to each measure and the rationale for each measure. The list of recommended measures and the associated trip credit is maintained by City/County Association of Governments of San Mateo County (C/CAG) as part of the San Mateo County CMP and are as follows:

Eligible TDM measures may include but are not limited to:

- Participation in a local Transportation Management Association (TMA) that provides documented, ongoing support for alternative commute programs;

- Appropriately located transit shelter(s);
- Preferred parking for carpools or vanpools;
- Designated parking for car-share vehicles;
- Requiring drivers to pay directly for using parking facilities;
- Public and/or private bike share program;
- Provision or subsidy of carpool, vanpool, shuttle, or bus service, including transit passes for site occupants;
- Required alternative work schedules and/or telecommuting for non-residential uses;
- Passenger loading zones for carpools and vanpools at main building entrance;
- Safe, well-lit, accessible, and direct route to the nearest transit or shuttle stop or dedicated, fully accessible bicycle and pedestrian trail;
- Car share membership for employees or residents;
- Emergency Ride Home programs;
- Green Trip Certification.
- Measures receiving TDM credit shall be:
 - Documented in a TDM plan developed specifically for each project and noted on project site plans, if and as appropriate;
 - Guaranteed to achieve the intended reduction over the life of the development, as evidenced by annual reporting provided to the satisfaction of City's Transportation Manager;
 - Required to be replaced by appropriate substitute measures if unable to achieve intended trip reduction in any reporting year;
 - Administered by a representative whose updated contact information is provided to the Transportation Manager.

City of Menlo Park Complete Streets Policy

The Complete Streets Policy was adopted by the City in 2013. The policy confirms the City's commitment to provide safe and convenient travel along and across streets for all users. It also requires Complete Streets infrastructure to be considered for incorporation into all significant planning, funding, design, approval, and implementation processes for new, maintenance, and retrofit construction.

City of Menlo Park Neighborhood Traffic Management Plan

The Neighborhood Traffic Management Plan (November 2004) was developed to mitigate the adverse effects of increased vehicle speeds and vehicle volumes on neighborhood streets. The primary goal of this plan is to correct unsafe conditions at prioritized locations with higher incidences and higher speeds. The plan recommends two levels of measures, Level I "Express" and Level II. Level I "Express" measures include education and enforcement initiatives. Level II measures are traffic management features that can be implemented to divert traffic and to restrict access to certain properties. The traffic management measures are recommended by City staff at the request of the community.

City of Menlo Park Transportation Master Plan

The City adopted the finalized TMP in November 2020 to serve as an update of the City's Bicycle and Sidewalk Plans and advance goals and policies set forth in the General Plan Circulation Element. The TMP provides the ability to identify appropriate projects to enhance the transportation network, conduct community engagement to ensure such projects meet the communities' goals and values, and prioritize projects based on need for implementation. The following recommended TMP projects proposed within the vicinity of the project site and are identified below for informational purposes only in Table 2.

Table 2. City of Menlo Park Recommended TMP Projects

TMP Project No.	Location	Project	Project Details	Cost
1.	Haven Avenue from Marsh Road to Haven Court	Bayfront Expressway Multimodal Corridor Project	Construct Class I Multi-Use Path from Marsh Road to Atherton Channel. Establish Class II Bicycle Lanes from Haven Court to Atherton Channel. Install Bicycle and Pedestrian crossing upgrades.	\$2,866,000
2.	Bayfront Expressway & Marsh Road	Bayfront Expressway Multimodal Corridor Project	Recommended Improvements: Modify southbound Haven Avenue approach to reduce delay. Install Bicycle and Pedestrian crossing upgrades. Funded Improvements: Widen eastbound Marsh Road and add additional right turn lanes. Install Class I Multi-Use Path along eastbound Marsh Road	\$206,000
8.	Bayfront Expressway & Willow Road	Bayfront Expressway Multimodal Corridor Project	Install bike signals, high-visibility crosswalks and cross-bike markings. Reconstruct eastbound Willow Road right-turn channelizing island to improve pedestrian access. Remove southbound Bayfront Expressway channelizing island to provide space for shoulder-running bus lane and implement a right-turn overlap phase. Modify traffic signal to accommodate channelized right turn modifications. Install Transit Signal Priority (TSP) for queue jumps by shoulder-running buses.	\$1,757,000
14.	Marsh Road from Bay Road to Scott Drive	Marsh Road Bicycle Network Improvement	Bay Road to Florence Street: Establish Class II Buffered Bicycle Lanes in both directions (requires removal of parking on the north side of street). Florence Street to Scott Drive: Establish Class II Buffered Bicycle Lanes in both	\$1,491,000

Table 2. City of Menlo Park Recommended TMP Projects

TMP Project No.	Location	Project	Project Details	Cost
			directions. Remove or modify existing median at Scott Drive.	
178.	Marsh Road between Independence Drive to Scott Drive	Marsh Road Corridor Mobility Project	Establish Class II Bike Lanes. Implement Caltrans District 4 Bike Plan Project Number SM-101-X14 that calls for the construction of an additional bicycle and pedestrian bridge over US 101 north of Marsh Road.	\$30,341,000
189.	University Drive between Oak Grove Avenue and Santa Cruz Avenue	Downtown Mobility Improvements	Establish Class II Bicycle Lanes on University Drive (requires removal of parking on at least one side of University Drive).	\$103,000

1.4 Improvements for Transportation Impacts

When deficiencies from a TIA are identified, improvements should be incorporated into projects as conditions of approval. Applicants will also be required to pay all applicable local and regional transportation impact fees. To the extent a project is conditioned to construct a project that is included within the local or regional fee program, a reimbursement agreement may be sought for a portion of the improvement project costs beyond the project's fair share. All project deficiencies should be addressed consistent with the policies of the General Plan. Under these circumstances, the applicant should meet with City staff to identify transportation improvements that address the deficiencies.

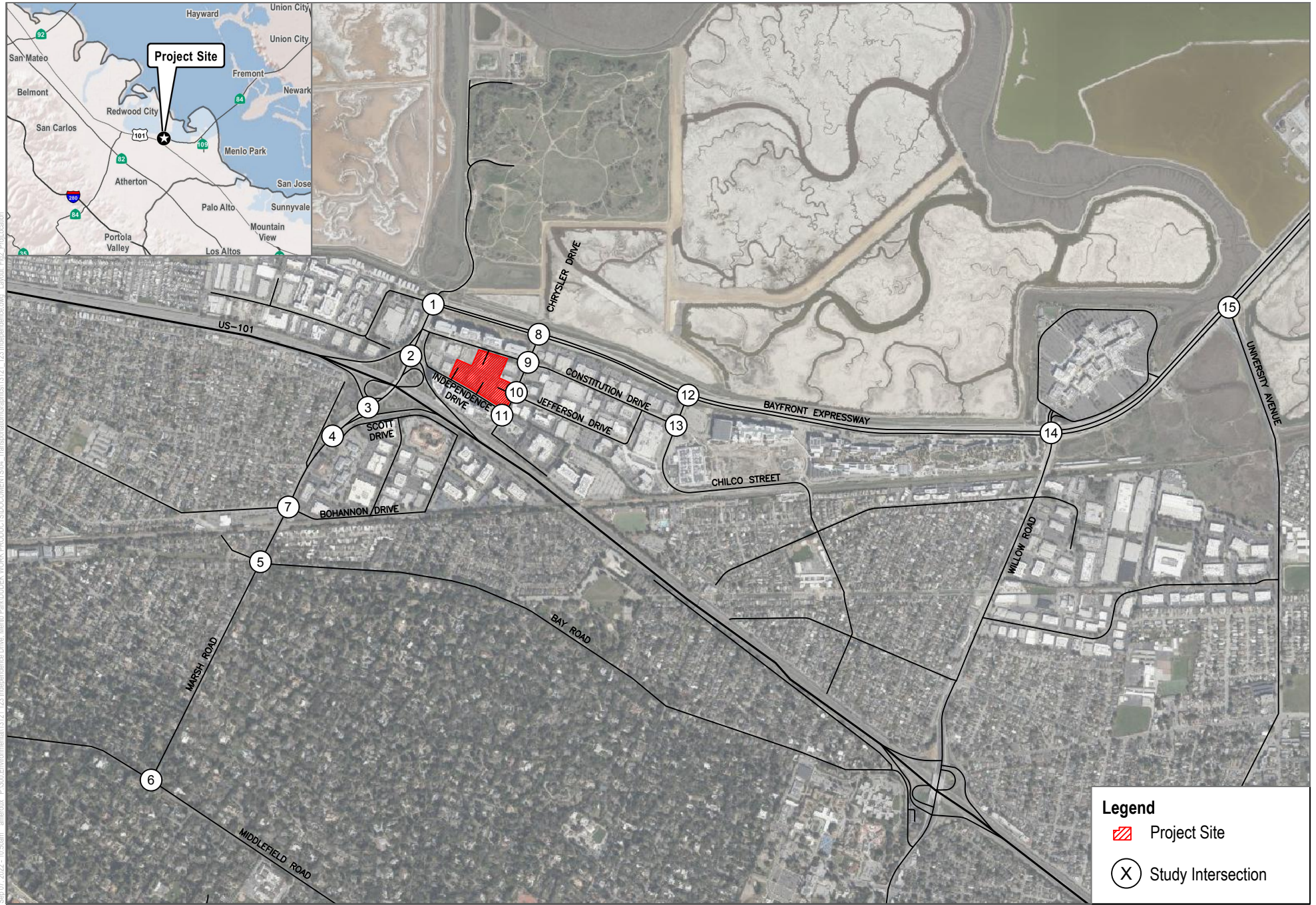
City of Menlo Park Transportation Impact Fee

The City of Menlo Park has a Transportation Impact Fee (TIF) codified in Municipal Code Chapter 13.26 to help fund transportation improvements as new development occurs in the City. New development and redevelopment projects are subject to the TIF to contribute to the cost of new transportation infrastructure associated with the development. The types of developments that are subject to the TIF are:

- All new development in all land use categories identified in the City's zoning ordinance
- Any construction adding additional floor area to a lot with an existing building
- New single-family and multi-family dwelling units
- Changes of use from one land use category to a different land use category that requires Planning Commission approval.

The TIF provides a mechanism to modernize the City's fee program to collect funds towards construction of the improvements expected to be identified and prioritized in the Transportation Master Plan (as noted above).

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SOURCE: Bing Maps

Figure 2
Project Location and Study Area
123 Independence Drive Residential Project

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2 Existing Conditions

This section describes existing conditions within the study area. Characteristics are provided for the existing roadway, transit, bicycle, and pedestrian facilities.

2.1 Roadway System

Characteristics of the existing street system within the study area are described below.

U.S. Highway 101 (US-101 or Highway 101) is a north-south, 10-lane, divided highway located south of the project site. The highway serves as a regional transportation corridor on the peninsula for the project, with access provided via the Marsh Road interchange. US-101 is designated as a Freeway/Expressway by the City of Menlo Park General Plan. The posted speed limit is 65 miles per hour (MPH) within the study area.

Marsh Road is a north-south, generally four-lane divided roadway with a raised median and left-turn pockets. The roadway is located west of the project site and connects the project to major corridors, including the Bayfront Expressway and Highway 101. Marsh Road is designated as a Thoroughfare from Bayfront Expressway to Scott Drive and Mixed Use Collector from Scott Drive to Bay Road by the City of Menlo Park General Plan. The posted speed limit is 35 MPH. Bicycle and pedestrian facilities and bus stops for the City of Menlo Park M3-Marsh Road Shuttle (M3 shuttle) are provided along the majority of the roadway within the study area.

Bayfront Expressway (State Route 84 or SR-84) is an east-west, six-lane, divided roadway with a raised median and left-turn pockets throughout the study area. The expressway connects the project site to major corridors and communities, including Interstate 880 (I-880) via the Dumbarton Bridge and communities in the East Bay. Bayfront Expressway is designated as a Freeway/Expressway by the City of Menlo Park General Plan. The posted speed limit is 50 MPH within the vicinity of the project site. Sidewalk, curb, and gutters are not provided along the majority of Bayfront Expressway within the study area; however, pedestrian crosswalks and bicycle lanes are provided at major intersections connecting bicycle and pedestrian facilities along adjacent streets to the Class I Bike Path that runs parallel to westbound traffic on the expressway.

Independence Drive is generally an east-west, undivided, two-lane roadway with a two-way left-turn lane (TWLTL) located along the project site's southern boundary and is designated as a Mixed Use Collector by the City of Menlo Park General Plan. Independence Drive serves as the primary roadway to and from the project site with bicycle and pedestrian facilities present throughout the roadway, except that there is no sidewalk, curb, or gutter along the northern edge of the roadway. Bike facilities along Independence drive are considered Class III Bike Routes. The posted speed limit is 25 MPH.

Chrysler Drive is a north-south trending, undivided, two-lane roadway located immediately east of the project site and connects the project to major corridors, such as Bayfront Expressway. Chrysler Drive is considered a Mixed Use Collector by the City of Menlo Park General Plan. Bicycle and pedestrian facilities are present throughout the roadway, except that there is no sidewalk, curb, or gutter along the western edge of the roadway between Jefferson Drive and Constitution Drive. A bus stop for the M3 shuttle is present at the Chrysler Drive/Constitution Drive intersection, as well as the Chrysler Drive/Independence Drive intersection. The posted speed limit is 25 MPH.

Constitution Drive is an east-west, undivided, two-lane roadway located immediately north of the project site that connects the project site to major corridors, such as Marsh Road. Constitution Drive is designated as a Mixed Use Collector by the City of Menlo Park General Plan. Bicycle and pedestrian facilities are located throughout the roadway. Bicycle facilities located along Constitution Drive are designated as Class II Bike Lanes per the City of Menlo Park's Draft Transportation Master Plan (TMP, August, 2020). Bus stops for the M3 shuttle are present along the westbound portion of the road. The posted speed limit is 30 MPH.

Jefferson Drive is a generally east-west, undivided, two-lane roadway located east of the project site. Jefferson Drive is designated as a Mixed Use Collector by the City of Menlo Park General Plan. Bicycle and pedestrian facilities and a bus stop for the M3 shuttle are located along the roadway. No posted speed limit is present.

Chilco Street is a north-south, generally undivided, two-lane roadway located approximately 0.5 miles east of the project site. From Bayfront Expressway to Hamilton Avenue, Chilco street is considered a Mixed Use Collector, and considered a Neighborhood Collector from Hamilton Avenue to Newbridge Street by the City of Menlo Park General Plan. A vegetative divider between lanes is present near the Bayfront Expressway intersection. Bicycle facilities are present along the road's non-residential portions, while parking is generally permitted along the road's residential portions south of Hamilton Avenue. Pedestrian facilities and bus stops for the City of Menlo Park M1-Crosstown Shuttle (M1 shuttle) are located throughout the roadway. The posted speed limit is 40 mph within the study area.

Scott Drive is an east-west, two-lane, undivided roadway located to the south of the project site. Scott Drive is designated as a Local Access Road by the City of Menlo Park General Plan. Eastbound portions of the roadway generally permit parking and have pedestrian facilities. Bus stops for the M3 shuttle are present along the Scott Drive/Marsh Road intersection. No posted speed limit is present.

Florence Street-Bohannon Drive is a predominately east-west, undivided, two-lane roadway with a TWLTL located south of the project site. Florence Street-Bohannon Drive is designated as a Local Access road by the City of Menlo Park General Plan. The Marsh Road intersection separates Florence Street to the west and Bohannon Drive to the east. Bicycle, pedestrian, and parking facilities are present on Florence street. Bicycle facilities along Florence Street are designated as Class II Bike Lanes per the TMP. Bus stops for SamTrans Route 207 bus and M3 shuttle are located along Florence Street and Bohannon Drive, respectively. The posted speed limit is 25 MPH within the study area.

Bay Road is an east-west, two-lane, undivided roadway located approximately 0.5 miles south of the project site, connecting Marsh Road with Willow Road to the east. Bay Road is designated as a Neighborhood Collector by the City of Menlo Park General Plan. Bicycle facilities are present on both sides of the roadway, and pedestrian facilities are present along the road's westbound portion. Bicycle facilities along Bay Road are designated as Class II Bike Lanes per the TMP. Bus stops for Route 83 of the San Mateo County Transit District's SamTrans bus service are located throughout the roadway. The posted speed limit is 30 MPH within the study area.

Middlefield Road is an east-west undivided roadway with left-turn pockets, located approximately 1.3 miles south of the project site. Middlefield Road is designated as an Avenue-Mixed Use by the Menlo Park General Plan. Bicycle, pedestrian facilities, and bus stops for SamTrans Route 296 and 397 buses are located along the roadway. Bicycle facilities along Middlefield Road are designated as Class II Bike Lanes per the TMP. The posted speed limit is 30 MPH within the study area.

Willow Road is a north-south, four to six-lane divided roadway with left-turn lane pockets. The roadway is located approximately 1.5 miles east of the project site and serves as a connection between major corridors, including Highway 101 and Bayfront Expressway. Willow Road is designated as a Boulevard from Bayfront Expressway to Bay Road, an Avenue – Mixed Use from Bay Road to Middlefield Road, and a Neighborhood Collector from Middlefield Road to Alma Road, per the City of Menlo Park General Plan. Bicycle and pedestrian facilities and bus stops for SamTrans Route 296 and 397 buses, Dunbarton Express (DB) bus, and M1 shuttle are provided along the roadway. Bicycle facilities located along Willow Road are designated as Class II Bike Lanes per the TMP. Parking is generally not permitted along the roadway, except for some portions in residential areas. The posted speed limit ranges from 25 to 40 MPH within the study area.

University Avenue is a north-south two to four-lane divided roadway with left-turn pockets located approximately 1.9 miles east of the project site. University Avenue is designated as a Boulevard according to the City of Menlo Park General Plan. Similar to Willow Road, University Avenue connects major corridors, including Highway 101 and Bayfront Expressway. Bicycle and pedestrian facilities and bus stops for SamTrans Route 280, 281, 296, and 397 buses, DB bus, and M1 shuttle are provided along the roadway. Bicycle facilities along University Avenue are classified as Tier II Bike Paths per the TMP. While parking is generally not permitted, some stretches of the road allow street parking. The posted speed limit is 25 MPH within the study area.

2.2 Transit System

Figure 3 shows the existing transit facilities within the study area. The project site is served by passenger rail and bus services. The Caltrain commuter rail system serves the Menlo Park Station, located at 1120 Merrill Street, approximately 2 miles south of the project site. The study area is also served by the Menlo Park Shuttle Service and the SamTrans bus service, which collectively provide local and regional public transit within the project area.

Caltrain

Caltrain is a commuter railroad operating between San Francisco and San Jose, with limited service to Gilroy. As of 2022, Caltrain's fleet consists of 29 locomotives, 134 passenger cars, and 52 bike cars that service 31 stations over a 51 mile corridor. Caltrain is owned and operated by the Peninsula Corridor Joint Powers Board, which is made up of representatives from the City and County of San Francisco, the San Mateo County Transit District, and the Santa Clara Valley Transportation Authority (Caltrain 2022).

As noted above, the proposed project would be served by Caltrain's Menlo Park Station, which is located approximately 2.0 miles to the south of the project. Weekday headways for northbound and southbound trains at this station average around 45 to 60 minutes.

Menlo Park Shuttle Service

The City of Menlo Park offers a free shuttle service for local community destinations and commuters working in business parks. The commuter shuttles serve Marsh Road and Willow Road business parks from the Caltrain station during commute hours by the M3 and M1 shuttles, respectively. However, the project site would mainly be served by the M3 shuttle. The M3 Shuttle serves the Menlo Park Caltrain Station, primarily operating along Marsh Road and roadways within the adjacent business parks, Middlefield Road, and Oak Grove Avenue. The nearest M3 shuttle stop is located at the intersection of Chrysler Drive and Independence Drive, immediately southeast of the project

site. The M3 shuttle provides morning and afternoon commuter service with 60-minute peak service headways to synchronize with Caltrain's peak period schedule (City of Menlo Park 2022).

San Mateo County Transit District (SamTrans)

SamTrans bus services are part of the regional public transit and transportation effort conducted by the County of San Mateo to provide bus service throughout San Mateo County and into parts of San Francisco and Palo Alto. In total, SamTrans operates 76 bus routes throughout its service area (SamTrans 2022). Route 270 is the closest bus route to the project site, with stops along Haven Avenue and East Bayshore Road. Route 270 serves the Redwood City Transit Center, primarily operating along East Bayshore Road, Jefferson Drive, Broadway Street, Bay Road, and Marsh Road. The 3719 Haven Avenue bus stop would serve as the nearest stop to project site, located approximately 0.25 miles northwest. Route 270 provides 60-minute headways during weekday peak service (SamTrans 2022).

2.3 Pedestrian and Bicycle Facilities

The City's TMP indicates that, while the City's sidewalk network is largely complete, there are still a number of challenges that can make walking difficult for many residents. These issues include difficulty crossing multi-lane, high-traffic volume streets, lack of buffers between sidewalks from traffic, and obstruction of sidewalks by municipal and utility infrastructure (e.g., utility poles) (City of Menlo Park 2020).

Land uses around the project site are predominately comprised of general offices, which serve as areas with active transportation users. Sidewalks are present along the eastbound portions of Independence Drive. Within Chrysler Drive, sidewalks are present along the southbound portion of the roadway near the road's intersection with Independence Drive and along all of the northbound portion of the road. Sidewalks are also present along the westbound portion of Constitution Drive and along a small section of the eastbound section of the roadway. These roadways are outfitted with storm drain outlets that either flow into the municipal storm drain system or directly into vegetated swales. Designated crosswalks are also present along most of the intersections near the project site

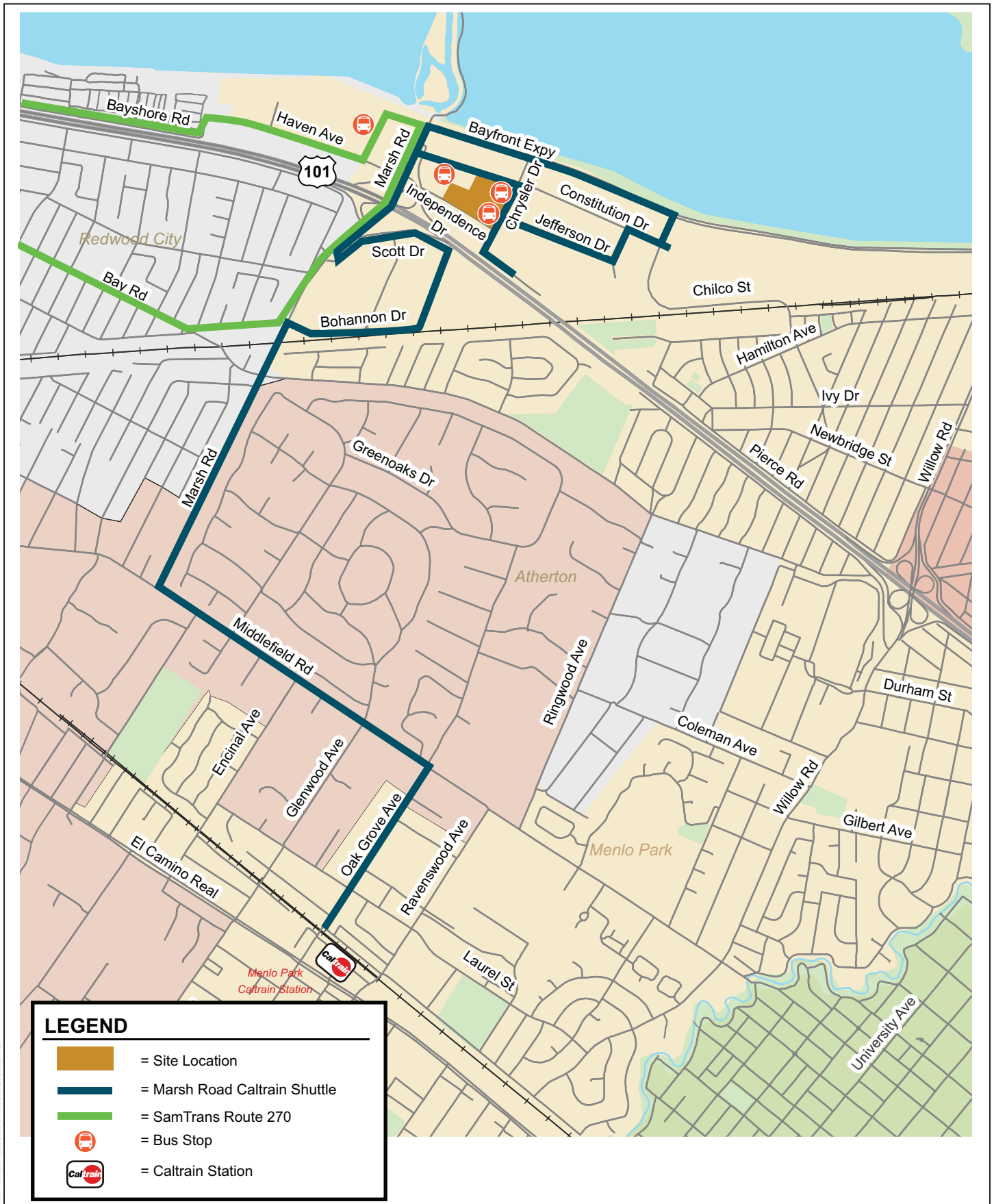
Figure 4 illustrates the existing and future bicycle facilities in the study area. The City's TMP also includes specific class designations for bicycle facilities within the City. The following designations are used to classify bicycle facilities with the City:

- **Class I Shared Use Path** allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelt or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing.
- **Class II On-Street Bicycle Lanes** is designated exclusively for bicycle travel. On-street bicycle lanes are separated from vehicle lanes by striping and can include pavement stencils and other treatments. On-street bicycle lanes are most appropriate on collector streets with single-lane of traffic in each direction where moderate traffic volumes and speeds are too high for shared-roadway use.
- **Class III: Shared Roadways** allows for bicyclists and motor vehicles to use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes; however, they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent lane to pass a bicyclist unless a wide outside lane or shoulder is provided.

- **Class IV: Separated Bikeways** is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of an on-street bike lane. A separated bikeway is physically separated from motor traffic by a vertical element and distinct from the sidewalk. In situations where on-street parking is allowed, separated bikeways are located between the parking and the sidewalk.

The closest designated bicycle facility is a Class III Bike Route along Independence Drive, located immediately south of the project site. In addition, an existing Class I Bike Path is provided along Bayfront Expressway and Class II Bike Lanes are present on Constitution Drive, Jefferson Drive, and Chrysler Drive. As indicated in the TMP, proposed bicycle facilities in the vicinity of the project site include an extension of the Class II Bike Lane along Haven Avenue Drive and a Class II Bike Lane along Marsh Road, from Bayfront Expressway to Bay Road.

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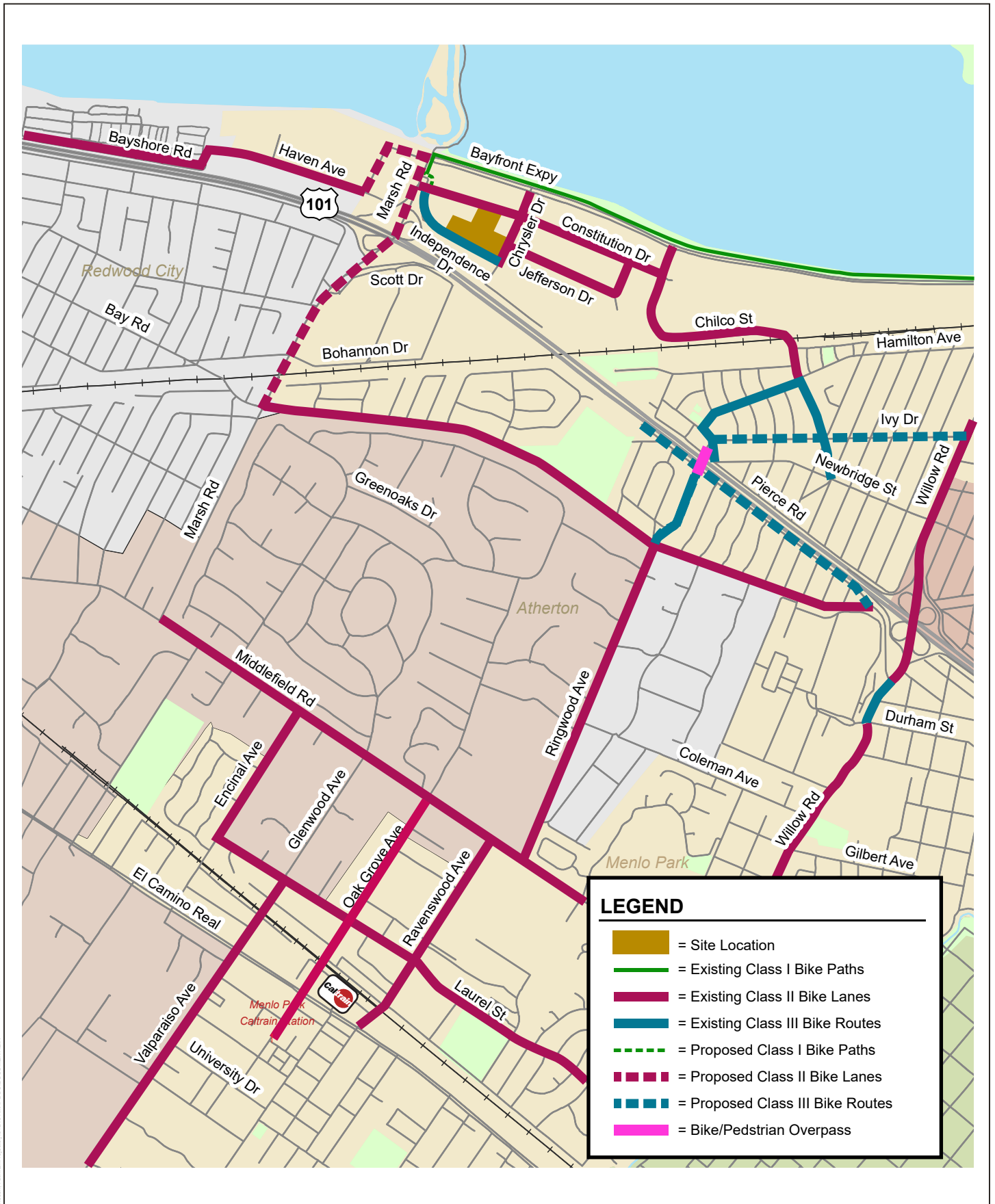
SOURCE: Hexagon 2022

FIGURE 3

Existing Transit Facilities

123 Independence Drive Residential Project

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SOURCE: Hexagon 2022

FIGURE 4

Existing and Proposed Bicycle Facilities

123 Independence Drive Residential Project

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3 Project Traffic

This section documents the trip generation, distribution, and assignment of project traffic in the study area.

3.1 Trip Generation

The project would include demolition of five existing office and industrial buildings, and the construction of 116 townhomes and 316 rental apartments.

Trip generation estimates for the proposed project are based on daily and AM and PM peak hour trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Handbook, 11th Edition (2021). In order to accurately represent the proposed project's trip generation, trips generated from the existing land uses that the project would replace were calculated and subtracted resulting in the net project trip generation. Consistent with the City of Menlo Park City Ordinance 1026, a 20 percent reduction was applied to account for the proposed TDM plan that the project would be required to provide. The TDM would be expected to achieve the required minimum of 20 percent reduction of daily and peak hour vehicle trips. Table 3 displays the proposed project trip generation estimates.

Table 3. Project Trip Generation

Land Use	ITE Code	Size/Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates ¹									
Research and Development Center	760	per TSF	11.08	0.84	0.19	1.03	0.16	0.82	0.98
Manufacturing	140	per TSF	4.75	0.52	0.16	0.68	0.23	0.51	0.74
Multifamily Housing (Mid-Rise) - buildings 4 to 10 stories in height	221	per DU	4.54	0.09	0.28	0.37	0.24	0.15	0.39
Multifamily Housing (Low-Rise) - buildings 3 stories or less in height	220	per DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Trip Generation of Existing Uses									
119 Independence Drive - Tree Care	760	12.996 TSF	144	10	2	12	2	11	13
123-25 Independence Drive - Defense Contractor	760	12.335 TSF	137	10	2	12	2	10	12
127 Independence Drive - Medical Device R&D	760	13.822 TSF	153	12	3	15	3	11	14
130 Constitution Drive - Defense Contractor	760	25.528 TSF	283	22	5	27	4	21	25
1205 Chrysler Drive - Energy Company	140	39.302 TSF	187	20	7	27	9	20	29
Existing Uses Subtotal			904	74	19	93	20	73	93

Table 3. Project Trip Generation

Land Use	ITE Code	Size/Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Generation of Proposed Project									
Residential - Multifamily (Apartments) - 4 stories in height	221	316 DU	1,435	27	90	117	76	48	124
Residential - Multifamily (Townhomes) - 3 stories in height	220	116 DU	782	12	35	47	37	22	59
Proposed Project Subtotal			2,217	39	125	164	112	70	182
TDM Plan: 20 percent Reduction ²			-443	-8	-25	-33	-22	-14	-36
Proposed Project Total			1,774	31	100	131	90	56	146
Total Net Project Trip Generation (Proposed – Existing)			870	-43	81	38	70	-17	53

Source: ITE 2021

Notes: TSF = thousand square feet; DU = dwelling unit¹ Trip rates from Trip Generation, 11th Edition, Institute of Transportation Engineers, 2021.² Consistent with the City of Menlo Park City Ordinance 1026, a 20 percent reduction was applied to account for the proposed TDM plan that the project would be required to provide. The TDM would be expected to achieve the required minimum of 20 percent reduction of daily and peak hour vehicle trips.

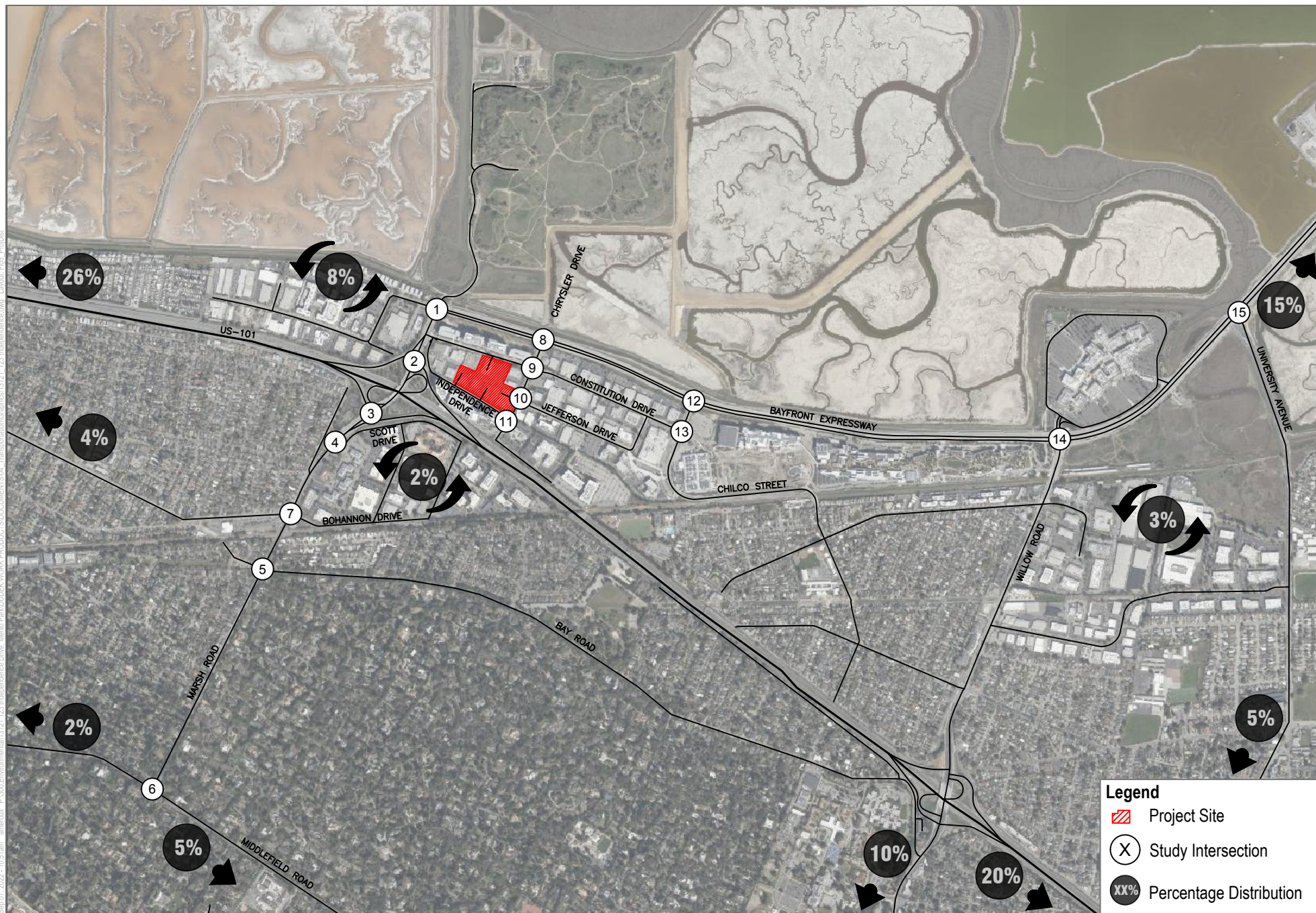
As shown in Table 4, the proposed project, after the application of the 20 percent reduction as required by the TDM plan, would generate 1,774 daily trips, 131 AM peak hour trips (31 inbound and 100 outbound), and 146 PM peak hour trips (90 inbound and 56 outbound). After subtracting for the existing land uses, the proposed project's net trip generation would be 870 daily trips, 38 AM peak hour trips (-43 inbound and 81 outbound), and 53 PM peak hour trips (70 inbound and -17 outbound). It is important to note that the negative trips are a result of the existing land uses consisting of employment generating uses that generate a greater proportion of inbound traffic in the AM peak hour and a greater proportion of outbound traffic in the PM peak hour as compared to the residential uses that the proposed project would construct.

3.2 Trip Distribution and Assignment

Project trip distribution percentages are based on logical travel paths to and from the project site and consideration of established traffic distribution patterns in the area. Project vehicles were distributed to and from each driveway. The project's trip distribution percentages were approved by the City's Public Works Department prior to the completion of the transportation analysis and the TIA.

The existing land uses within the project site that would be replaced by the project were calculated and subtracted from the roadway network. Figure 5 illustrates the project trip distribution and Figure 6 illustrates the existing land uses trip assignment. The proposed project trip assignment (without any subtracting of existing land uses) is provided in Figure 7. Finally, once the existing land uses were removed from the roadway network, the net project trip assignment could be calculated. Figure 8 displays the net project trip assignment.

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SOURCE: Bing Maps

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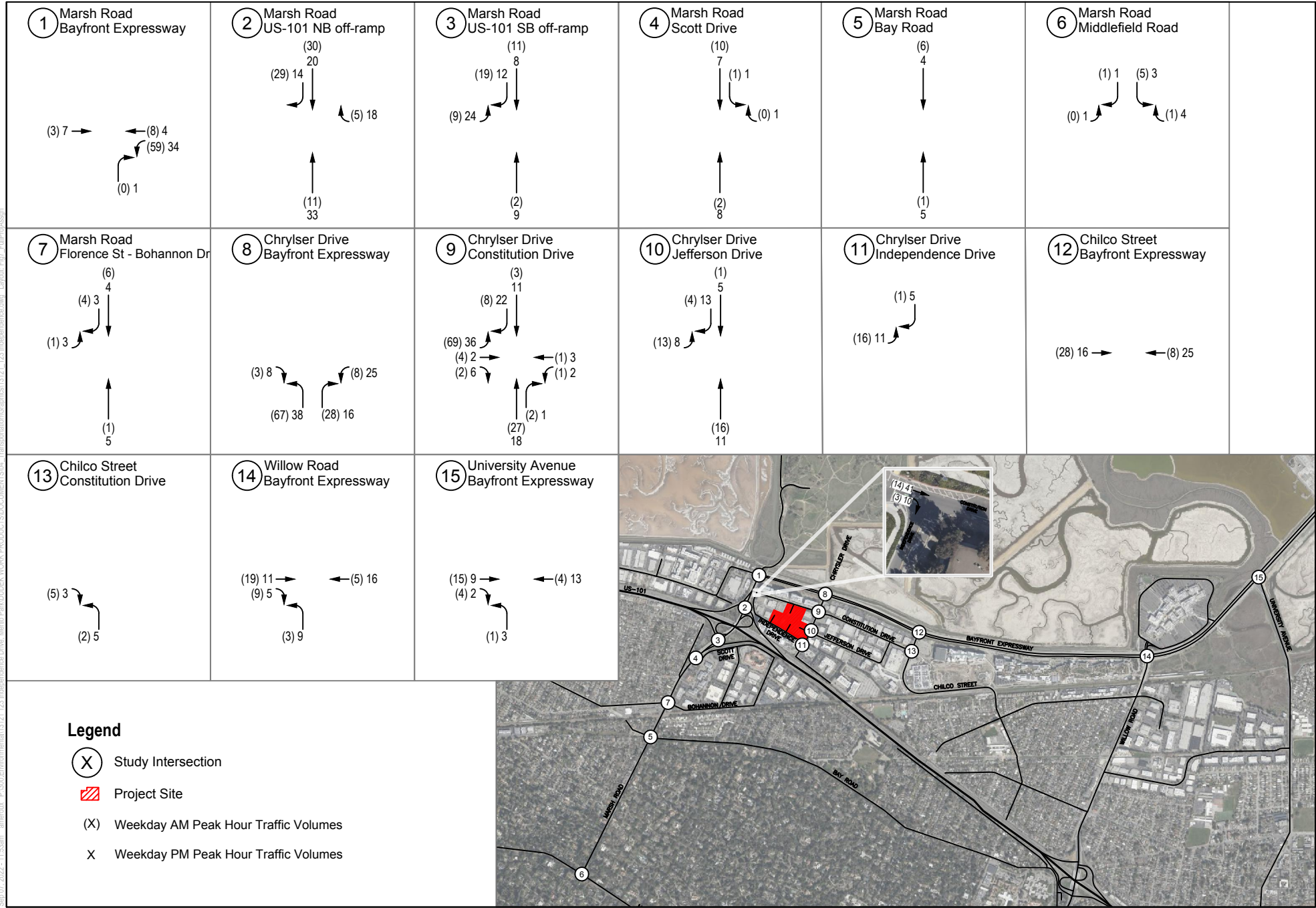


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Figure 5
Project Trip Distribution
123 Independence Drive Residential Project

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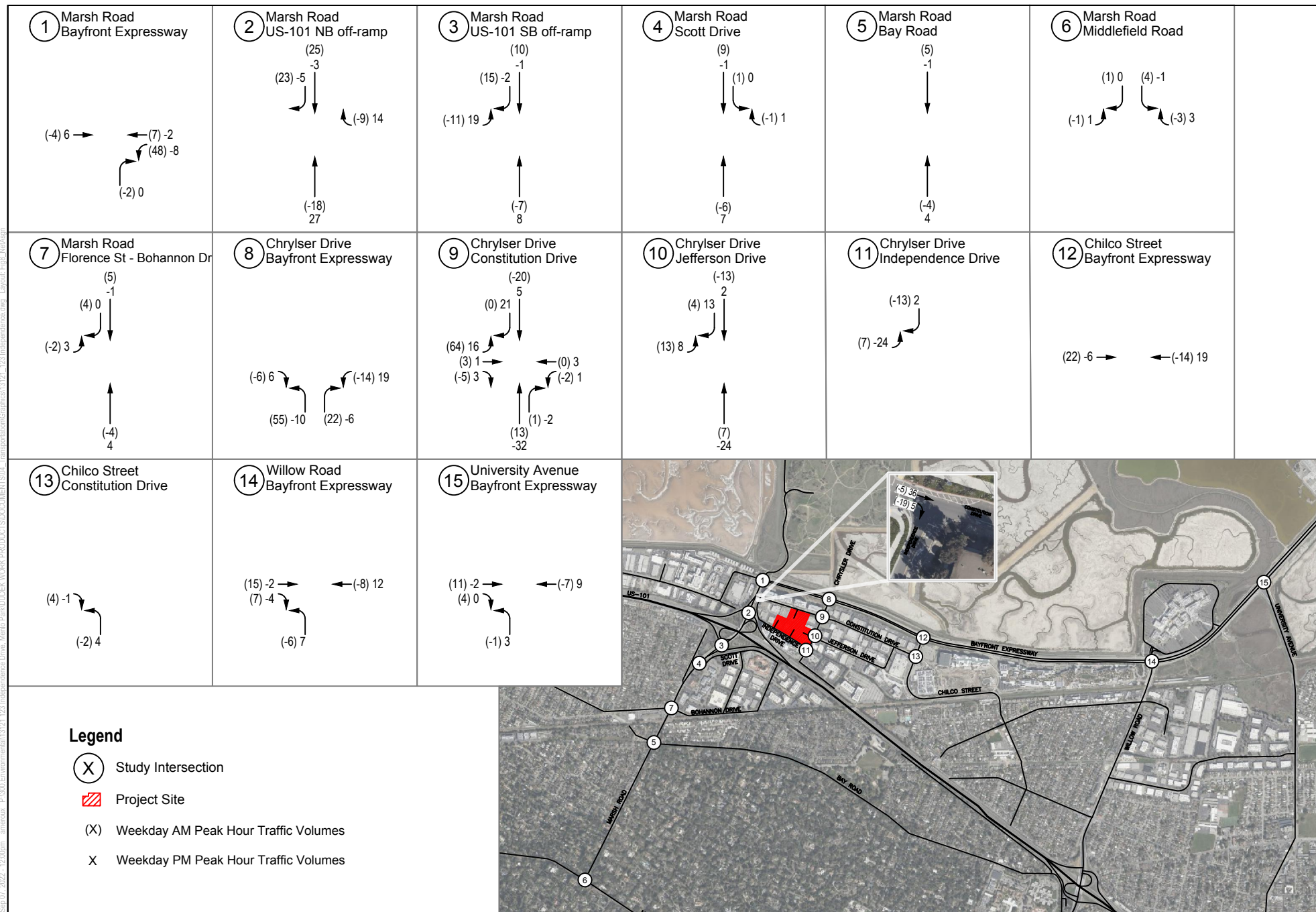
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SOURCE: Bing Maps

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4 Vehicle Miles Traveled Analysis

This section describes the vehicle miles traveled (VMT) analysis of the proposed project.

4.1 Significance Threshold

According to City VMT guidelines, the evaluation of residential land use is based on a daily VMT per capita metric. Using the City's Travel Demand Model that has been customized for City's transportation analysis and as described in detail under VMT Analysis, this metric is calculated only for home-based trips, per OPR's technical advisory. Based on the latest citywide travel demand model, regional average residential VMT is 13.1 per capita. Therefore, the City's residential VMT impact threshold, at 15% below regional average, would be 11.2 daily VMT per capita.

4.2 VMT Analysis

To determine the appropriate VMT analysis tool (e.g., C/CAG VMT sketch model or City's travel demand model). Based on discussion with the City, the citywide travel demand forecast model was used. The model is a mathematical representation of travel within the nine Bay Area counties, as well as Santa Cruz, San Benito, Monterey and San Joaquin counties. The base model structure was developed by MTC and further refined by the C/CAG and Santa Clara Valley Transportation Authority for use within San Mateo County and Santa Clara County. The City further refined this model for application with Menlo Park to add more detail to the zone structure and transportation network. The model has a base year of year 2019.

There are four main components of the model: 1) trip generation, 2) trip distribution, 3) mode choice, and 4) trip assignment. The model uses socioeconomic inputs (i.e., population, income, employment) aggregated into geographic areas, called transportation analysis zones (TAZ) to estimate travel within the model area. There are 80 TAZs within the model to represent the City of Menlo Park. The model was used to estimate the proposed project's effect on VMT in accordance with the City's VMT guidelines. The proposed project is located in TAZ 3070, and Figure 9 displays the VMT thresholds and TAZs within the area.

The most readily available long-range forecast year is 2040, which assumes buildout of the City of Menlo Park General Plan and any pending General Plan Amendments, buildout of the pending developments in the City of East Palo Alto (as of December 2020), and regional growth projected by the Association of Bay Area Governments (ABAG), modified by VTA/C/CAG for model land use inputs. Therefore, the project's VMT analysis was conducted under year-2040 conditions. The project's VMT summary is provided in Table 4.

Table 4. Vehicle Miles Traveled Summary

Land use / VMT Metric	Regional Average	VMT Threshold (15 percent below Regional Average)	Project Transportation Analysis Zone (TAZ 3070)	VMT Impact	VMT Reduction needed
Residential /per capita	13.1	11.2	13.29	Yes	16 percent

Notes: All data referenced is from the latest Menlo Park citywide travel demand forecasting model provided by Hexagon. It should be noted that the City's Transportation Guidelines do not include the latest VMT thresholds for residential and office uses.

Because the project is a residential use, the efficiency metric of VMT per capita was used. A project-specific model run was conducted and the project's home based VMT was extracted from the TAZ. The project's VMT was estimated to be 13.29 VMT per capita. The regional average VMT per capita is 13.1 and the threshold is 11.2 VMT per capita for the City. Therefore, the project VMT exceeds the VMT significance threshold by 16 percent. The estimated project VMT does not account for the project's proposed TDM plan. Without any TDM measures, the project's residential use may cause substantial additional VMT.

The TDM plan would need to achieve a minimum 16.0 percent reduction in VMT to reduce the proposed project's impacts to less-than-significant levels, which is within the 20 percent reduction in vehicle trips required by Section 16.45.090 of the Menlo Park Municipal Code. The TDM measures to be implemented by the project include services, incentives, actions, and planning and design features related to the attributes of the site design and site amenities. Such design features encourage walking, biking, and use of transit. Some of the recommended TDM measures are programs that would be created and implemented by the Property Manager or the Transportation Coordinator. The project's recommended TDM measures are provided in Table 5.

Table 5. Recommended TDM Measures

TDM Measure	Applies to Apartment Residents, Townhome Residents or Both	Implementation Responsibility
Program Administration		
Designating a Transportation Coordinator	Both	Property Manager
Online Kiosk/TDM Information Board ¹	Both	Transportation Coordinator
Transportation Information Packets	Both	Transportation Coordinator
Trip Planning Assistance	Both	Transportation Coordinator
Program Monitoring and Reporting		
Annual Resident Surveys	Both	Transportation Coordinator
Target Drive-alone Mode Share Monitoring	Both	Transportation Coordinator
Carpool and Vanpool Programs		
511 Ridematching Service	Both	Available to Public
Incentives for New Carpools/Vanpools	Both	Available to Public
Bicycle Facilities		
Bicycle Parking	Both	Building developer
Bicycle Repair Station	Both	Building developer
Ebike and Cargo Bicycle	Apartment Residents	Building developer
Resources (bikeway maps & other info)	Both	Building developer
Pedestrian Facilities		
Pedestrian Scale Lighting	Both	Building developer
New Sidewalks	Both	Building developer
Other On-Site Amenities		
Fitness Room and Club Room	Apartment Residents	Building developer
High-bandwidth Internet Connection	Apartment Residents	Building developer
Pet Spa	Apartment Residents	Building developer
Pool and SPA	Apartment Residents	Building developer

Table 5. Recommended TDM Measures

TDM Measure	Applies to Apartment Residents, Townhome Residents or Both	Implementation Responsibility
Transit Elements		
Transit Subsidy	Both ²	Building developer
Unbundled Parking	Apartment Residents	Building developer

Notes:

- ¹ The building developer will have initial responsibility for creating an online kiosk and appointing the Transportation Coordinator. After the building is occupied, the Transportation Coordinator will have ongoing responsibility for the online kiosk and various program elements.
- ² Transit subsidies are not practical for ownership units (Townhomes) on an on-going basis. However, a free one-year transit pass will be given to each new owner upon original purchase from the developer.

Proposed TDM measures and estimated VMT reductions applicable to the project's residential use are described below and summarized in Table 6.

Table 6. TDM Measures and Estimated VMT Reduction

TDM Measure (CAPCOA ID)	Applied VMT Reduction Rate for Residential Use
Bike Parking (SDT-7)	0.63 percent
Pedestrian Network Improvement (SDT-1)	1 percent
Unbundled Parking (PDT-2) ^a	6 percent
Commute Trip Reduction Marketing (TRT-7)	2 percent
Increase Density (LUT-1)	5 percent
Transit Subsidies (TRT-4)	6 percent
Total	20.63 percent^b

Notes:

- ^a Unbundled Parking will be applied to the proposed apartment residential units only. Source: California Air Pollution Control Officers Association (CAPCOA) report, August 2010.
- ^b A reduction in trips is considered equivalent to a reduction in VMT.

These measures have been calculated by using the Bay Area Air Quality Management District (BAAQMD) TDM Tool that assists with calculating VMT reductions due to TDM measures based on the CAPCOA research. Based on the TDM Tool, with the implementation of the proposed TDM measures, the project would achieve a reduction of more than 20 percent of the VMT generated by the proposed residential development as shown in Table 7 above.

The project would be required to implement a TDM Plan achieving a 20% reduction from gross ITE trip generation rates (according to Table 4, Project Trip Generation, the reduction required equals 443 daily trips). As noted in the CAPCOA Handbook when estimating VMT or GHG reductions in the Transportation sub-sector, the adjustment factor from vehicle trips to VMT is 1. This assumes that all vehicle trips will average out to typical trip length ("assumes all trip lengths are equal"). Thus, it can be assumed that a percentage reduction in vehicle trips will equal the same percentage reduction in VMT. Additionally, daily trips generated by projects is a metric that can be measured and periodically reviewed using the TDM plan. The Transportation Coordinator shall prepare, Implement, monitor and report a Residential TDM Plan for the project to the satisfaction of the City's Transportation Manager and per the Menlo Park Municipal Code requirements. The TDM Plan reporting shall include annual commute surveys, annual

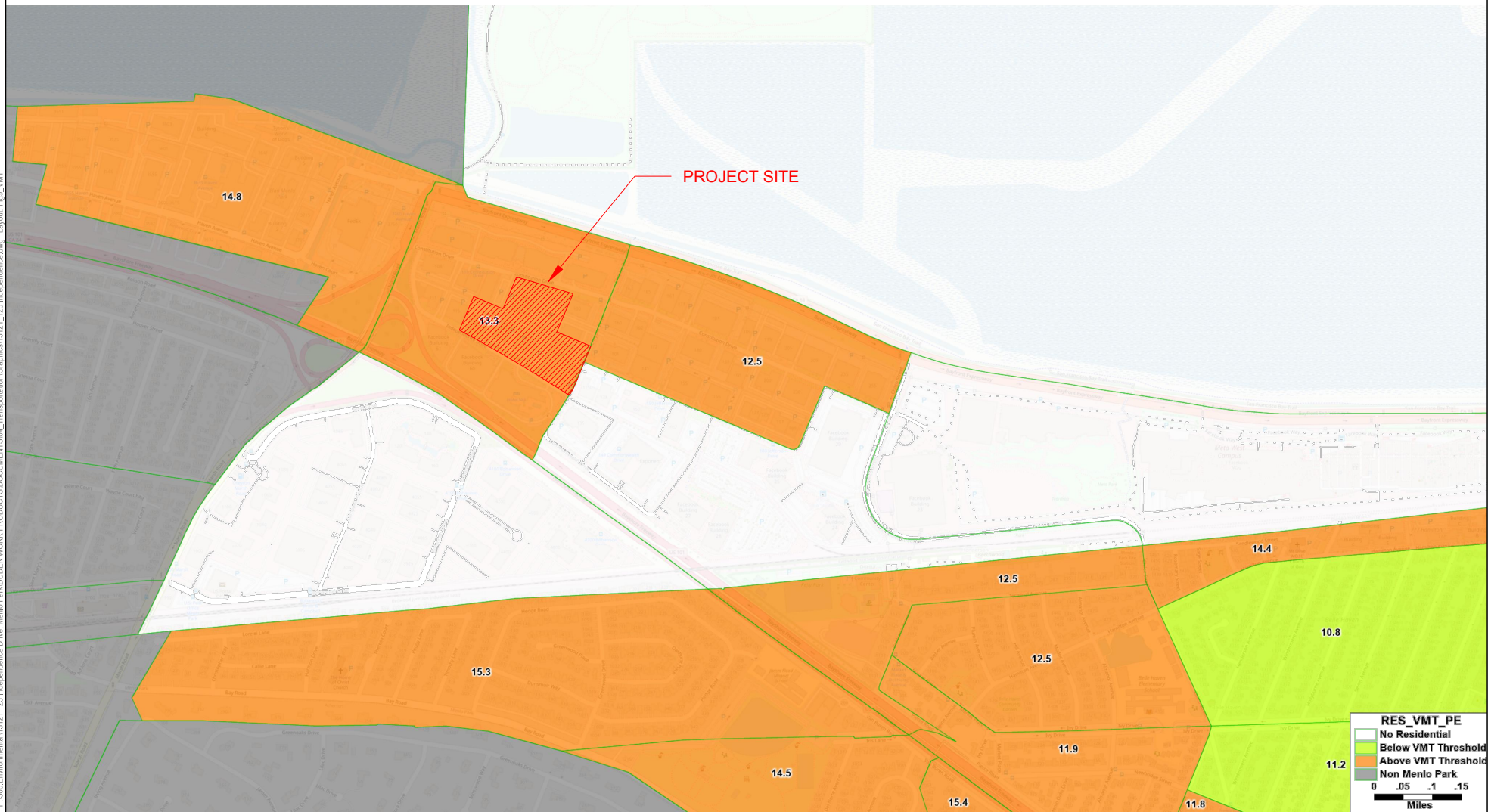
driveway counts and annual reporting to demonstrate that 20 percent peak hour trip reduction requirement has been achieved. If the reduction has not been achieved in the reporting period, the report shall provide additional measures that will be implemented in the coming year in order to achieve the City's requirement.

The required residential TDM Plan will include annual monitoring and reporting requirements on the effectiveness of the TDM program. The project applicant submitted a draft residential TDM Plan (Appendix A), which contains specific measures that would meet this trip reduction requirement. The draft TDM Plan is subject to City review and approval. If the annual monitoring finds that the TDM reduction is not met, the TDM coordinator will be required to work with City staff to detail next steps to achieve the TDM reduction. Based on the City's transportation engineer, if needed, there are additional measures that could be added to the TDM that would ensure the required reduction is met. Additional measures include scaling up certain measures as their popularity increases such as electric vehicle charging stations, bike and e-scooter parking and storage, and participation in further local and regional transit programs. With the implementation of the required residential TDM Plan, the project's VMT impact would be less than significant.

Consistent with OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA a project's cumulative impacts are based on an assessment of whether the "incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." A project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. An efficiency-based threshold applies only to the proposed project without regard to the VMT generated by the previously existing land use.

The project would be consistent with the development assumptions included in ConnectMenlo. Implementation of the land use and transportation changes described in ConnectMenlo would create a built environment that supports a live/work/play environment with increased density and diversity of uses and a street network that supports safe and sustainable travel and is expected to reduce VMT per capita by providing housing within the study area where the Project Site is located and is surrounded by various offices. Consistent with the findings of the ConnectMenlo EIR, the project, in combination with cumulative projects and as assessed for year 2040 which includes buildout of the City of Menlo Park General Plan, would have a less-than-significant cumulative impact with mitigation with respect to VMT. There would be no significant cumulative VMT impact to which the project could contribute, and the project would not combine with past, present, and foreseeable future projects to create such impact; therefore, this impact would remain less than significant.

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SOURCE: Hexagon 2022; City of Menlo Park Travel Demand Model

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Figure 9
VMT Thresholds and Traffic Analysis Zones

123 Independence Drive Residential Project

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5 Level of Service Analysis

5.1 Existing Traffic Operations

This section details the existing intersection and roadway segment operations within the study area. Figure 10 displays the existing traffic control and roadway geometrics. Existing weekday AM and PM peak hour are summarized in Figure 11.

An intersection LOS analysis was prepared for the existing conditions using HCM 6 methodology via the PTV Vistro LOS software as discussed in Chapter 1.3. Table 7 shows the results of the existing conditions analysis. LOS worksheets are provided in Appendix B.

Table 7. Existing Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	LOS Method	Existing			
				AM Peak		PM Peak	
				Avg. Delay ¹	LOS ²	Avg. Delay ¹	LOS ²
1	Marsh Road/Bayfront Expressway	Menlo Park/State	HCM Signal	59.4	E	52.6	D
2	Marsh Road/US-101 NB Off-Ramp	Menlo Park/State	HCM Signal	16.0	B	13.6	B
3	Marsh Road/US-101 SB Off-Ramp	Menlo Park/State	HCM Signal	18.8	B	17.1	B
4	Marsh Road/Scott Drive	Menlo Park	HCM Signal	19.4	B	31.8	C
5	Marsh Road/Bay Road	Menlo Park	HCM Signal	20.2	C	19.0	B
6	Marsh Road/Middlefield Road	Atherton	HCM Signal	37.8	D	31.9	C
7	Marsh Road/Florence Street-Bohannon Drive	Menlo Park	HCM Signal	36.2	D	49.7	D
8	Chrysler Dive/Bayfront Expressway	Menlo Park/State	HCM Signal	8.5	A	13.7	B
9	Chrysler Drive/Constitution Drive	Menlo Park	HCM Signal	58.5	E	22.8	C
10	Chrysler Drive/Jefferson Drive-East Driveway	Menlo Park	HCM TWSC	21.0	C	21.2	C
11	Chrysler Drive/Independence Drive	Menlo Park	HCM TWSC	50.6	F	18.7	C
12	Chilco Street/Bayfront Expressway	Menlo Park/State	HCM Signal	13.7	B	17.8	B
13	Chilco Street/Constitution Drive	Menlo Park	HCM Signal	45.3	D	46.1	D
14	Willow Road/Bayfront Expressway	Menlo Park/State	HCM Signal	115.4	F	111.1	F
15	University Avenue/Bayfront Expressway	Menlo Park/State	HCM Signal	11.9	B	106.7	F
D1	Southwest Driveway/Independence Drive	Menlo Park	HCM TWSC	does not exist			

Table 7. Existing Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	LOS Method	Existing			
				AM Peak		PM Peak	
				Avg. Delay ¹	LOS ²	Avg. Delay ¹	LOS ²
D2	Southeast Driveway/Independence Drive	Menlo Park	HCM TWSC	does not exist			
D3	North Driveway/Constitution Drive	Menlo Park	HCM TWSC	does not exist			

Notes:**Bold** – Exceeds LOS threshold

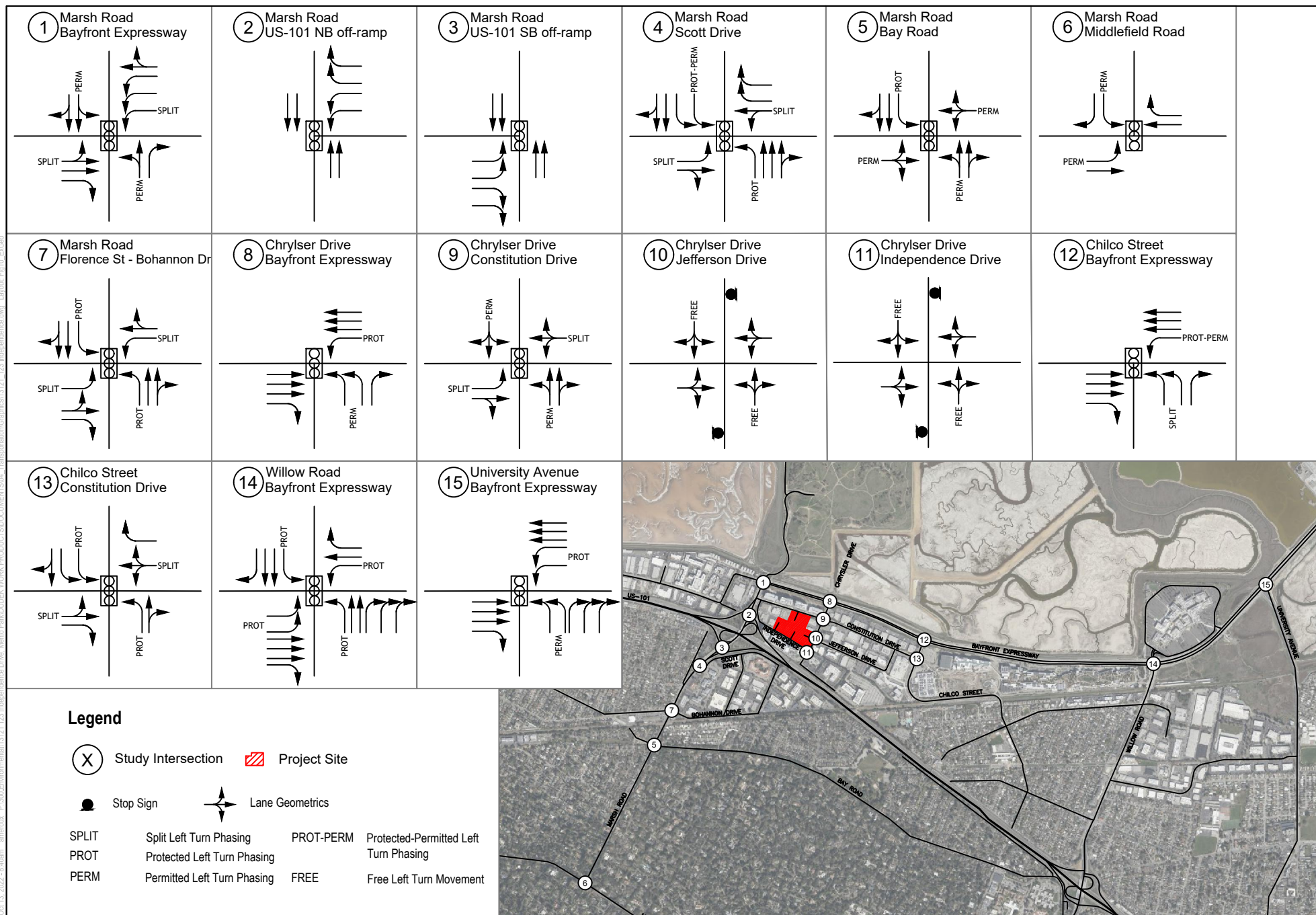
HCM = Highway Capacity Manual; TWSC = Two-Way Stop-Controlled; AWSC = All-Way Stop-Controlled

¹ Delay in seconds per vehicle² Level of Service (LOS)

As shown in the table, all the study area intersections are currently operating at satisfactory levels of service (LOS D or better) under existing conditions per City standards, with the exception of the following intersections:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM peak hour (*signalized*)
- #9 (Chrysler Drive/Constitution Drive) – LOS E in AM peak hour (*signalized*)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour; LOS E in PM peak hour (*unsignalized*)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (*signalized*)
- #15 (University Avenue/Bayfront Expressway) – LOS F in PM peak hour (*signalized*)

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SOURCE: Bing Maps

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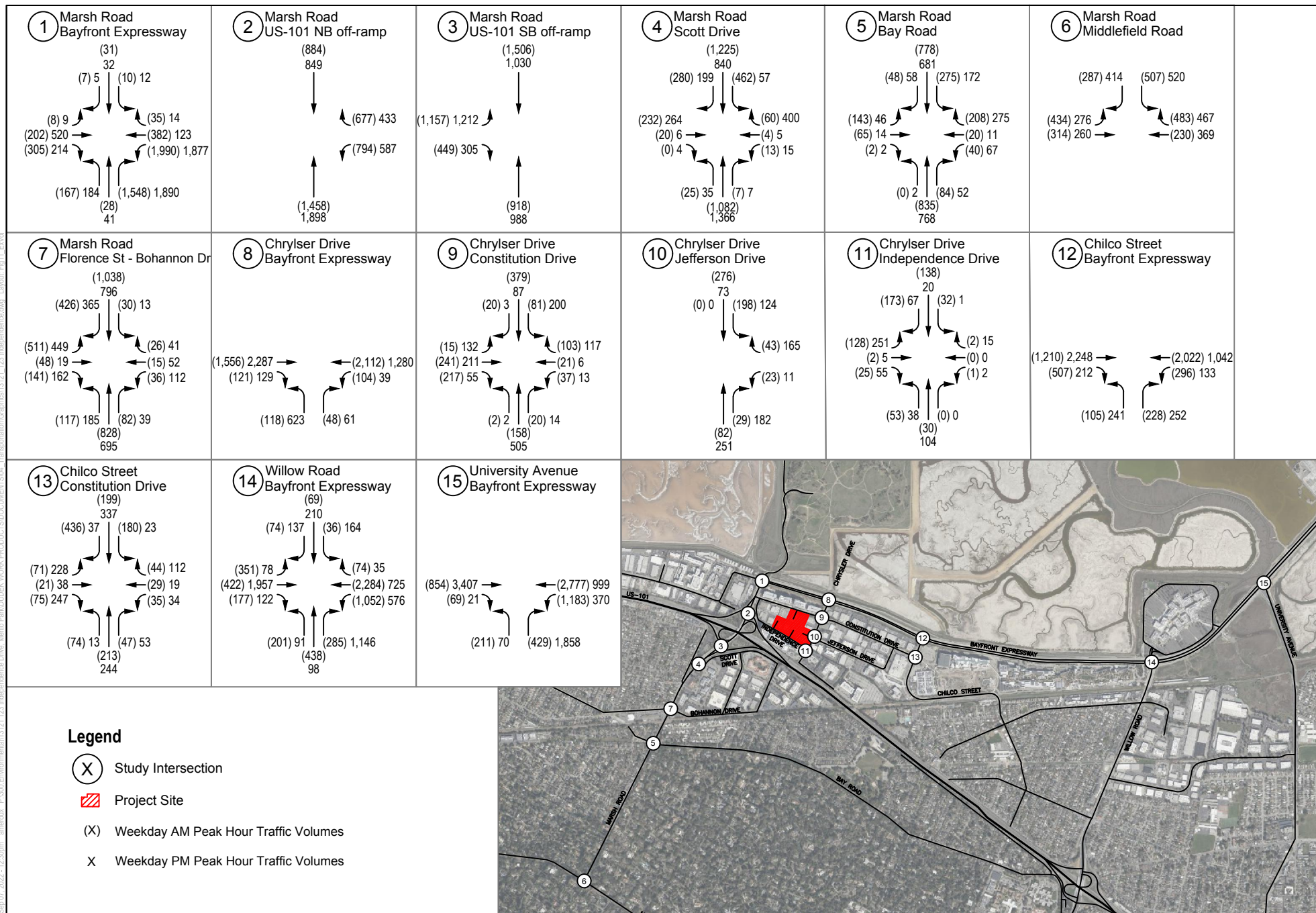


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Figure 10
Existing Intersection Controls and Geometrics

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SOURCE: Bing Maps

Figure 11
Existing Peak Hour Traffic Volumes

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5.2 Near-Term (2025) and Near-Term (2025) plus Project Traffic Operations

This section details the Near-Term (2025) intersection and roadway segment operations within the study area with and without the addition of project traffic. Near-Term (2025) weekday AM and PM peak hour traffic volumes are summarized in Figure 12, and Near-Term (2025) plus Project AM and PM peak hour traffic volumes are summarized in Figure 13.

Near-Term (2025) conditions are representative of a cumulative conditions analysis for a short-term horizon year (2025) assuming the proposed project is constructed and fully occupied. This section follows the City's TIA Guidelines for intersection LOS analysis. An intersection LOS analysis was prepared for the Near-Term (2025) conditions using HCM 6 methodology via the PTV Vistro LOS software as discussed in Chapter 1.3. Table 8 shows the results of the existing conditions analysis. LOS worksheets are provided in Appendix B.

Table 8 identifies the LOS for each intersection included in the study area under the Near-Term (2025) conditions with and without project traffic, and whether the project could cause the City's LOS standards to be exceeded. With the addition of project traffic, the following intersections would exceed the thresholds identified in the City's TIA guidelines and increase the average critical movement delay by 0.8 seconds or more during AM and/or PM peak hours. As such, the following intersections would be non-compliant with the City's TIA Guidelines under Near Term (2025) plus Project conditions.

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM and PM peak hours (signalized)
- #9 (Chrysler Drive/Constitution Drive) – LOS F in AM peak hour; LOS E in PM peak hour (signalized)
- #10 (Chrysler Drive/Jefferson Drive – East Driveway) – LOS F in AM peak hour (unsignalized)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour; LOS E in PM peak hour (unsignalized)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (signalized)

The Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant was performed at the unsignalized intersections (#10 and #11) and is provided in Appendix C. The warrant is not met in either peak hour primarily due to lower traffic volumes along Chrysler Drive.

A summary of recommended improvement measures is provided in Table 10 to improve intersection operations to pre-project conditions or better for consistency with the City's TIA Guidelines.

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Table 8. Near Term (2025) Plus Project Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	LOS Method	Critical Approach	Near Term (2025)				Near Term (2025) plus Project				Change in Avg. Delay		Inconsistent w/City Standards?¹		Inconsistent w/TIA Guidelines?²		Near Term (2025) plus Project w/Improvements			
					AM Peak		PM Peak		AM Peak		PM Peak		AM	PM	AM	PM	AM	PM	AM Peak		PM Peak	
					Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS							Avg. Delay	LOS	Avg. Delay	LOS
1	Marsh Road/Bayfront Expressway	Menlo Park/State	HCM Signal		58.8	E	60.6	E	59.2	E	61.8	E	0.4	1.2	Yes	Yes	Yes	Yes	50.8	D	63.5	E
				NB	82.9	F	81.3	F	83.0	F	83.7	F	0.1	2.4	Yes	Yes			17.9	B	35.2	D
				EB	99.3	F	86.5	F	99.2	F	87.0	F	-0.1	0.6	Yes	Yes			68.5	E	77.3	E
2	Marsh Road/US 101 NB Off-Ramp	Menlo Park/State	HCM Signal		30.8	C	17.8	B	31.4	C	18.7	B	0.6	0.9	No	No	No	No				
3	Marsh Road/US 101 SB Off-Ramp	Menlo Park/State	HCM Signal		19.8	B	17.7	B	20.0	C	18.1	B	0.2	0.4	No	No	No	No				
4	Marsh Road/Scott Drive	Menlo Park	HCM Signal		19.3	B	32.7	C	19.4	B	32.8	C	0.1	0.1	No	No	No	No				
5	Marsh Road/Bay Road	Menlo Park	HCM Signal		23.9	C	18.7	B	23.9	C	18.7	B	0.0	0.0	No	No	No	No				
6	Marsh Road/Middlefield Road	Atherton	HCM Signal		37.6	D	38.1	D	38.0	D	38.3	D	0.4	0.2	No	No	No	No				
7	Marsh Road/Florence Street-Bohannon Drive	Menlo Park	HCM Signal		40.4	D	55.1	E	40.5	D	55.1	E	0.1	0.0	No	Yes	No	No				
8	Chrysler Dive/Bayfront Expressway	Menlo Park/State	HCM Signal		12.7	B	20.3	C	13.8	B	22.5	C	1.1	2.2	No	No	No	No				
9	Chrysler Drive/Constitution Drive	Menlo Park	HCM Signal		230.9	F	73.7	E	239.4	F	104.2	F	8.5	30.5	Yes	Yes	Yes	Yes	140.1	F	45.5	D
				SB	340.5	F	208.4	F	400.1	F	314.7	F	59.7	106.3	Yes	Yes			338.1	F	100.6	F
				EB	241.6	F	30.4	C	232.3	F	33.3	C	-9.2	2.9	Yes	No			47.6	D	30.5	C
10	Chrysler Drive/Jefferson Drive-East Driveway	Menlo Park	HCM TWSC		56.6	F	20.8	C	67.3	F	28.9	D	10.7	8.1	Yes	No	Yes	Yes	20.1	C	22.1	C
11	Chrysler Drive/Independence Drive	Menlo Park	HCM TWSC		291.3	F	45.5	E	336.3	F	50.9	F	45.0	5.4	Yes	Yes	Yes	Yes	31.7	C	21.7	C

Table 8. Near Term (2025) Plus Project Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	LOS Method	Critical Approach	Near Term (2025)				Near Term (2025) plus Project				Change in Avg. Delay		Inconsistent w/City Standards? ¹		Inconsistent w/TIA Guidelines? ²		Near Term (2025) plus Project w/Improvements			
					AM Peak		PM Peak		AM Peak		PM Peak		AM	PM	AM	PM	AM	PM	AM Peak		PM Peak	
					Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS							Avg. Delay	LOS	Avg. Delay	LOS
12	Chilco Street/Bayfront Expressway	Menlo Park/State	HCM Signal		33.8	C	57.6	E	33.9	C	58.7	E	0.1	1.1	No	Yes	No	No				
				NB	N/A	N/A	165.1	F	N/A	N/A	165.1	F	N/A	0.0	No	Yes						
13	Chilco Street/Constitution Drive	Menlo Park	HCM Signal		33.8	C	171.1	F	33.9	C	163.0	F	0.1	-8.1	No	Yes	No	No				
				EB	N/A	N/A	295.0	F	N/A	N/A	294.1	F	N/A	-1.0	No	Yes	No	No				
14	Willow Road/Bayfront Expressway	Menlo Park/State	HCM Signal		137.1	F	113.0	F	136.9	F	114.3	F	-0.2	1.3	Yes	Yes	No	Yes	N/A	N/A	- ³	- ³
				NB	291.2	F	241.9	F	285.1	F	240.7	F	-6.1	-1.2	Yes	Yes			N/A	N/A	- ³	- ³
				SB	68.2	E	130.3	F	68.6	E	139.4	F	0.4	9.1	Yes	Yes			N/A	N/A	- ³	- ³
15	University Avenue/Bayfront Expressway	Menlo Park/State	HCM Signal		14.1	B	105.4	F	14.2	B	105.8	F	0.1	0.4	No	Yes	No	No				
				NB	N/A	N/A	161.3	F	N/A	N/A	161.1	F	N/A	-0.2	No	Yes	No	No				
D1	Southwest Driveway/Independence Drive	Menlo Park	HCM TWSC		N/A				12.7	B	13.1		N/A		B	No	No	No				
D2	Southeast Driveway/Independence Drive	Menlo Park	HCM TWSC		N/A				12.1	B	12.4		N/A		B	No	No	No				
D3	North Driveway/Constitution Drive	Menlo Park	HCM TWSC		N/A				17.7	C	12.0		N/A		B	No	No	No				

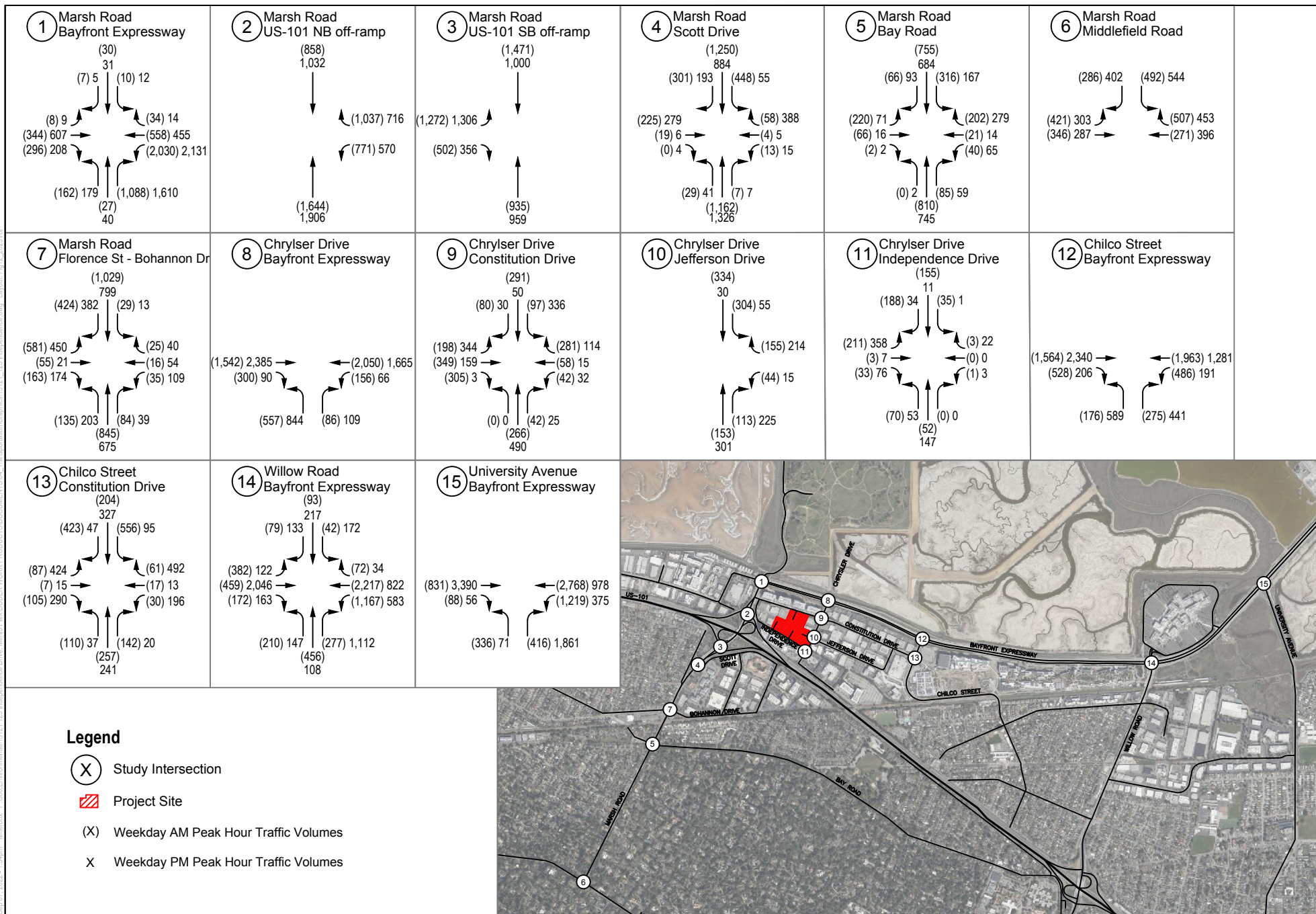
Notes: Bold – Exceeds LOS threshold
TWSC = two-way stop control; LOS reported for the movement with highest delay
N/A = not applicable – critical approach information is not relevant. Critical approach information is relevant where the proposed project would increase delay over the City’s LOS thresholds.

¹ Inconsistency with City standards is provided for informational purposes only to determine whether intersection LOS meets General Plan standards.

² The City’s TIA guidelines indicate that intersections with deficient LOS may result in "...a project [being] considered potentially noncompliant with local policies." The City has discretion to allow LOS to be exceeded in order to achieve other Circulation Element goals and policies.

³ TIF improvements include adaptive traffic signal coordination along the Bayfront Expressway corridor which is likely to improve LOS operations; however, LOS is unable to be quantified at this time. Additionally, physical intersection improvements are considered infeasible due to right-of way (ROW) constraints.

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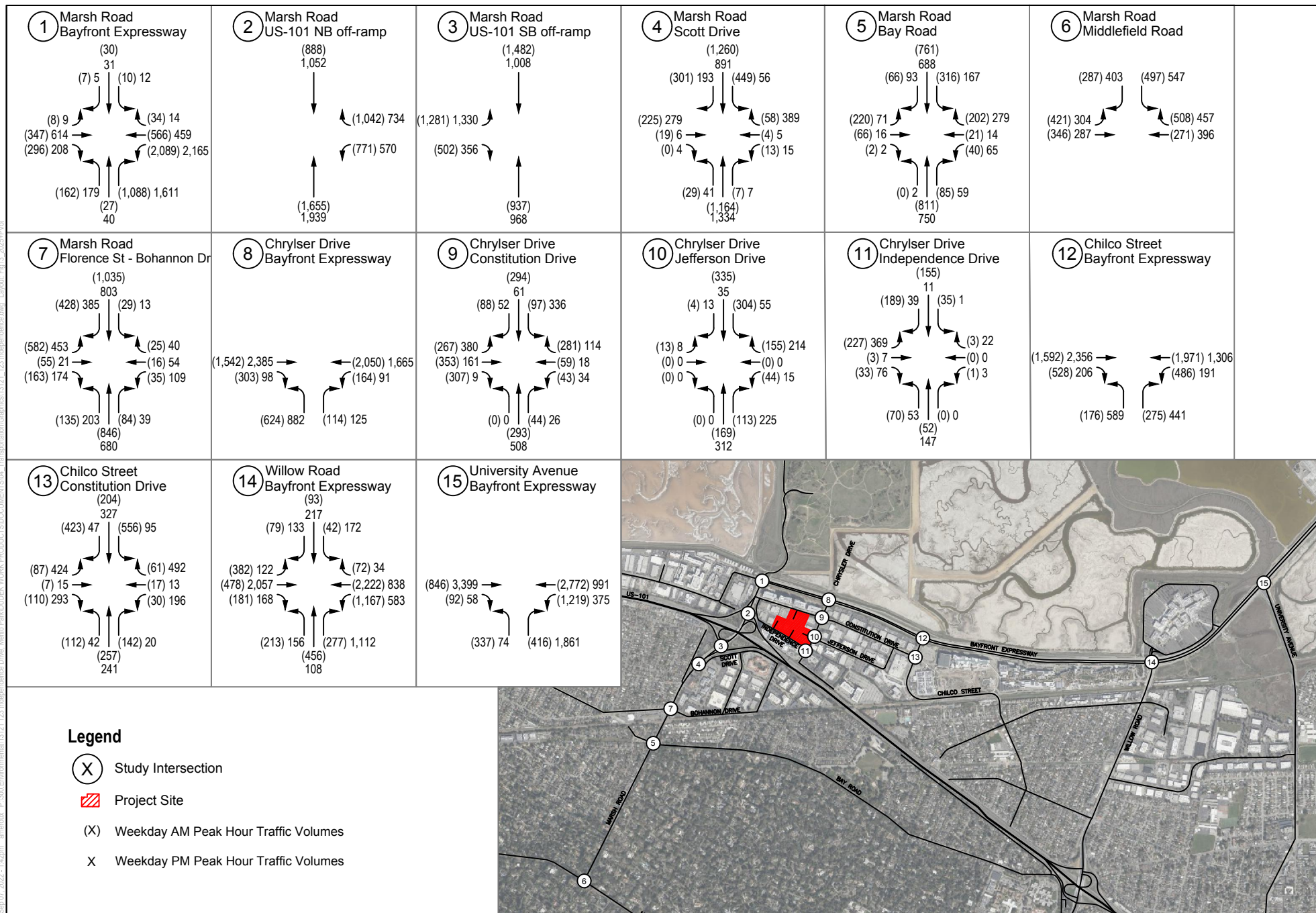


SOURCE: Bing Maps

Figure 12
Near-Term (2025) Peak Hour Traffic Volumes

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SOURCE: Bing Maps

Figure 13
Near-Term (2025) plus Project Peak Hour Traffic Volumes

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5.3 Cumulative (2040) and Cumulative (2040) plus Project Traffic Operations

This section details the Cumulative (2040) intersection and roadway segment operations within the study area with and without the addition of project traffic. Cumulative (2040) weekday AM and PM peak hour traffic volumes are summarized in Figure 12, and Cumulative (2040) plus Project AM and PM peak hour traffic volumes are summarized in Figure 13.

Cumulative (2040) conditions are representative of a cumulative conditions analysis for a long-term horizon year (2040) assuming both buildout of the General Plan and full operation of the proposed project. This section follows the City's TIA Guidelines for intersection LOS analysis. The PTV Vistro software was used to determine intersection LOS, consistent with HCM 6 methodology for both signalized and unsignalized intersections, and detailed LOS calculation worksheets are included in Appendix B.

Table 9 identifies the LOS for each intersection included in the study area under the cumulative no project and plus project conditions and whether the project could cause the City's LOS standards to be exceeded. With the addition of project traffic, the following intersections would exceed the thresholds identified in the City's TIA guidelines and increase the average critical movement delay by 0.8 seconds or more during AM and/or PM peak hours. As such, the following intersections would be non-compliant with the City's TIA Guidelines under cumulative (2040) plus project conditions.

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM peak hour; LOS F in PM peak hour (signalized)
- #9 (Chrysler Drive/Constitution Drive) – LOS F in AM and PM peak hours (signalized)
- #10 (Chrysler Drive/Jefferson Drive – East Driveway) – LOS F in AM peak hour; LOS E in PM peak hour (unsignalized)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour (unsignalized)
- #13 (Chilco Street/Constitution Drive) – LOS F in AM and PM peak hours (signalized)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (signalized)

The Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant was performed at the unsignalized intersections (#10 and #11) and is provided in Appendix C. The warrant is not met in either peak hour primarily due to lower traffic volumes along Chrysler Drive.

A summary of recommended improvement measures is provided in Table 10 to improve intersection operations to pre-project conditions or better for consistency with the City's TIA Guidelines.

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Table 9. Cumulative (2040) Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	LOS Method	Critical Approach	Cumulative (2040)				Cumulative (2040) plus Project				Change in Avg. Delay		Inconsistent w/City Standards ¹		Inconsistent w/TIA Guidelines? ²		Cumulative (2040) plus Project w/Improvements			
					AM Peak		PM Peak		AM Peak		PM Peak								AM Peak		PM Peak	
					Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	AM	PM	AM	PM	Avg. Delay	LOS	Avg. Delay	LOS		
1	Marsh Road/Bayfront Expressway	Menlo Park/State	HCM Signal		61.9	E	96.3	F	62.5	E	99.1	F	0.6	2.8	Yes	Yes	No	Yes	54.5	D	97.7	F
				NB	74.9	E	101.6	F	75.0	E	101.6	F	0.2	0.0	Yes	Yes			37.8	D	100.8	F
				EB	111.4	F	132.1	F	112.0	F	134.9	F	0.6	2.8	Yes	Yes			78.0	E	126.5	F
2	Marsh Road/US 101 NB Off-Ramp	Menlo Park/State	HCM Signal		61.6	E	21.3	C	62.2	E	22.8	C	0.6	1.5	Yes	No	No	No				
3	Marsh Road/US 101 SB Off-Ramp	Menlo Park/State	HCM Signal		21.8	C	18.0	B	22.4	C	18.3	B	0.6	0.3	No	No	No	No				
4	Marsh Road/Scott Drive	Menlo Park	HCM Signal		31.7	C	36.9	D	31.8	C	37.0	D	0.1	0.1	No	No	No	No				
5	Marsh Road/Bay Road	Menlo Park	HCM Signal		64.9	E	54.9	D	64.8	E	54.9	D	-0.1	0.0	Yes	No	No	No				
				EB	182.5	F	N/A	N/A	182.5	F	N/A	N/A	0.0	N/A	Yes	No	No	No				
6	Marsh Road/Middlefield Road	Atherton	HCM Signal		48.3	D	45.4	D	49.1	D	45.7	D	0.8	0.3	No	No	No	No				
7	Marsh Road/Florence Street-Bohannon Drive	Menlo Park	HCM Signal		60.3	E	90.9	F	60.4	E	90.8	F	0.1	-0.1	Yes	Yes	No	No				
				NB	84.9	F	195.9	F	84.9	F	195.0	F	0.0	-0.9	Yes	Yes						
8	Chrysler Dive/Bayfront Expressway	Menlo Park/State	HCM Signal		11.7	B	29.8	C	12.8	B	36.3	D	1.1	6.5	No	No	No	No				
9	Chrysler Drive/Constitution Drive	Menlo Park	HCM Signal		328.6	F	151.4	F	342.1	F	193.5	F	13.5	42.1	Yes	Yes	Yes	Yes	252.7	F	106.5	F
				SB	635.8	F	489.9	F	713.5	F	640.0	F	77.7	150.1	Yes	Yes			633.0	F	321.4	F
				EB	266.6	F	40.4	D	253.4	F	43.0	D	-13.2	2.6	Yes	No			97.2	F	41.1	D
10	Chrysler Drive/Jefferson Drive-East Driveway	Menlo Park	HCM TWSC		76.5	F	22.2	C	117.8	F	36.0	E	41.3	13.8	Yes	Yes	Yes	Yes	19.9	B	26.0	C
11	Chrysler Drive/Independence Drive	Menlo Park	HCM TWSC		47.9	E	17.8	C	60.5	F	18.5	C	12.6	0.7	Yes	No	Yes	Yes	15.5	B	18.7	B
12	Chilco Street/Bayfront Expressway	Menlo Park/State	HCM Signal		71.9	E	113.7	F	71.9	E	114.6	F	0.0	0.9	Yes	Yes	No	No				

Table 9. Cumulative (2040) Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	LOS Method	Critical Approach	Cumulative (2040)				Cumulative (2040) plus Project				Change in Avg. Delay		Inconsistent w/City Standards ? ¹		Inconsistent w/TIA Guidelines? ²		Cumulative (2040) plus Project w/Improvements			
					AM Peak		PM Peak		AM Peak		PM Peak								AM Peak		PM Peak	
					Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	Avg. Delay	LOS	AM	PM	AM	PM	Avg. Delay	LOS	Avg. Delay	LOS		
				NB	138.1	F	337.5	F	138.1	F	337.5	F	0.0	0.0	Yes	Yes						
13	Chilco Street/Constitution Drive	Menlo Park	HCM Signal		87.1	F	201.4	F	87.6	F	202.8	F	0.5	1.4	Yes	Yes	No	Yes	N/A	N/A	116.4	F
				NB	106.4	F	264.7	F	106.6	F	272.0	F	0.2	7.3	Yes	Yes			N/A	N/A	191.8	F
14	Willow Road/Bayfront Expressway	Menlo Park/State	HCM Signal		187.2	F	159.3	F	186.6	F	163.1	F	-0.6	3.8	Yes	Yes	No	Yes	N/A	N/A	- ³	- ³
				NB	379.9	F	255.0	F	373.7	F	253.8	F	-6.3	-1.2	Yes	Yes			N/A	N/A	- ³	- ³
				SB	60.6	E	387.4	F	60.8	E	421.4	F	0.2	34.0	Yes	Yes			N/A	N/A	- ³	- ³
15	University Avenue/Bayfront Expressway	Menlo Park/State	HCM Signal		13.2	B	141.2	F	13.2	B	141.7	F	0.0	0.5	No	Yes	No	No				
				NB	N/A	N/A	162.3	F	N/A	N/A	162.2	F	N/A	N/A	No	Yes						
D1	Southwest Driveway/Independence Drive	Menlo Park	HCM TWSC		N/A				11.2	B	11.3	B	N/A		No	No	No	No				
D2	Southeast Driveway/Independence Drive	Menlo Park	HCM TWSC		N/A				10.8	B	11.0	B	N/A		No	No	No	No				
D3	North Driveway/Constitution Drive	Menlo Park	HCM TWSC		N/A				17.6	C	12.1	B	N/A		No	No	No	No				

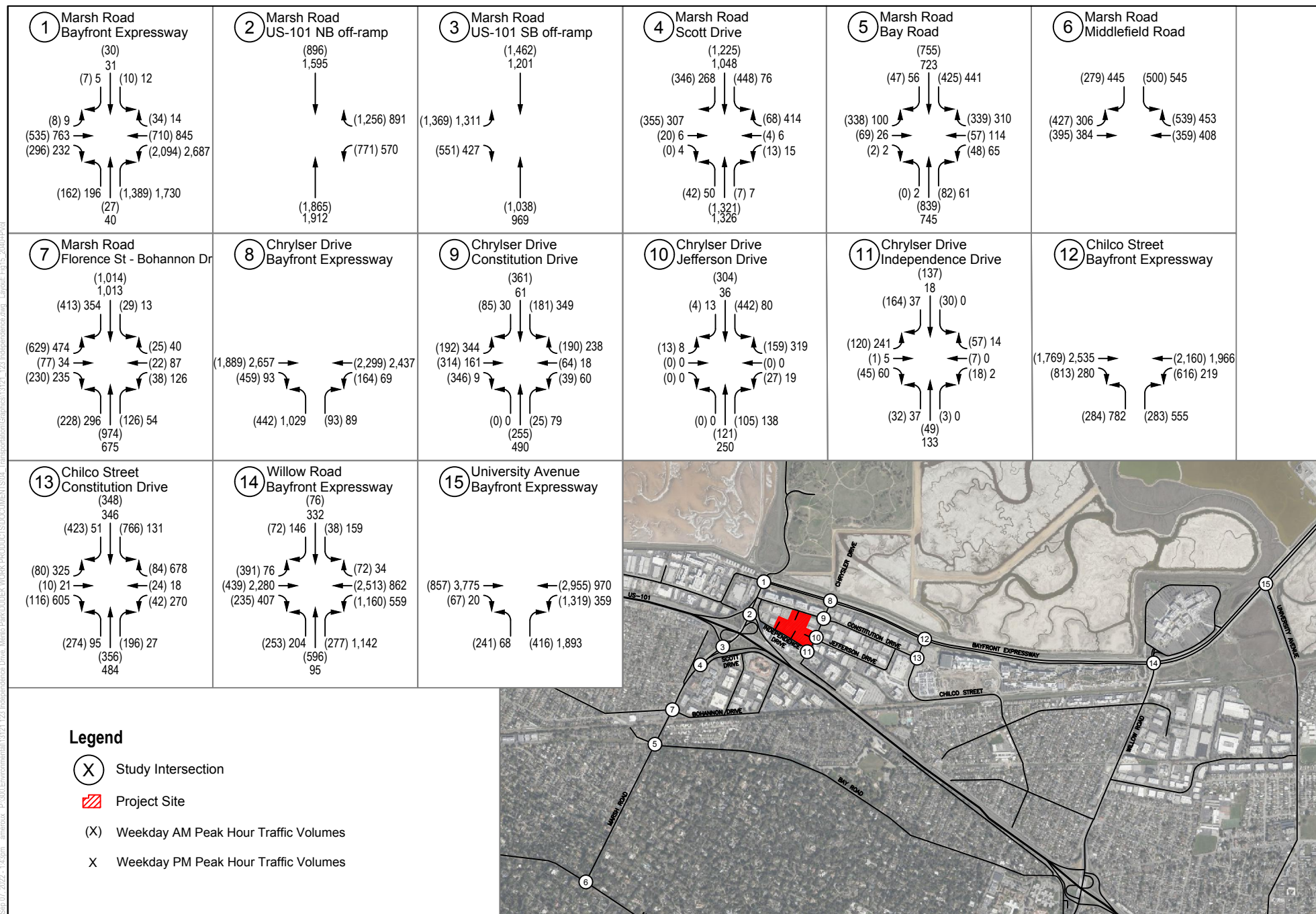
Notes: Bold – Exceeds LOS threshold
TWSC = two-way stop control; LOS reported for the movement with highest delay
N/A = not applicable – critical approach information is not relevant. Critical approach information is relevant where the proposed project would increase delay over the City’s LOS thresholds.

¹ Inconsistency with City standards is provided for informational purposes only to determine whether intersection LOS meets General Plan standards.

² The City’s TIA guidelines indicate that intersections with deficient LOS may result in "...a project [being] considered potentially noncompliant with local policies." The City has discretion to allow LOS to be exceeded in order to achieve other Circulation Element goals and policies.

³ TIF improvements include adaptive traffic signal coordination along the Bayfront Expressway corridor which is likely to improve LOS operations; however, LOS is unable to be quantified at this time. Additionally, physical intersection improvements are considered infeasible due to right-of way (ROW) constraints.

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SOURCE: Bing Maps



Figure 15

Cumulative (2040) plus Project Peak Hour Traffic Volumes

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5.4 Recommended Improvements

The improvements summarized in Table 10 would be necessary to bring the LOS back to acceptable levels per the City's TIA Guidelines under Near-Term (2025) and Cumulative (2040) plus Project conditions at the intersections identified in Chapters 5.2 and 5.3. LOS worksheets for intersections with recommended improvement measures are included in Appendix D. Figure 16 displays the conceptual geometrics for recommended improvement measures.

5.4.1 ConnectMenlo Mitigation Measures and City of Menlo Park Transportation Impact Fee (TIF) Program

It is noted that the ConnectMenlo EIR concluded that additional motor vehicle trips generated on the local roadway network as a result of the project would cause an increase in delay to peak hour vehicle traffic, resulting in significant impacts at some study intersections and roadway segments. The ConnectMenlo EIR was prepared before the 2018 CEQA Guidelines update, which included the section implementing SB 743 (CEQA Guidelines Section 15064.3) and before the City updated its Traffic Impact Analysis Guidelines. Thus, the ConnectMenlo EIR relied on LOS as a metric for defining significant environmental effects.

ConnectMenlo EIR Mitigation Measure TRANS-1a would require the widening of impacted roadway segments at appropriate locations throughout the city to add travel lanes and capacity to accommodate the increase in net daily trips. Implementation of Mitigation Measure TRANS-1a would reduce the impacts but not to a less than significant level. The ConnectMenlo EIR found that fully mitigating the impact to less than significant levels would be infeasible because it would require eliminating most of the year 2040 traffic growth on impacted segments, including background traffic growth and regional traffic growth outside the boundary of the City. Therefore, impacts to roadway segments were considered significant and unavoidable. However, these impacts are no longer considered environmental effects under CEQA.

ConnectMenlo EIR Mitigation Measure TRANS-1b requires updates to the City's TIF program to secure a funding mechanism for future roadway and infrastructure improvements to mitigate impacts from future projects (based on the current standards at the time the Final EIR was certified) but would not reduce the impact to less than significant levels. The City could not guarantee improvements at the impacted intersections because the nexus study (for development impact fees under AB 1600) had not been prepared, some improvements could cause secondary environmental impacts that would need to be addressed prior to construction, and some impacted intersections are within the jurisdiction of the City of East Palo Alto and Caltrans. Therefore, impacts to intersections were considered significant and unavoidable. Recently, the City's TIF program was updated and approved by the City Council. The City's Transportation Master Plan has been updated and was adopted by the City Council on November 17, 2020. The identified roadway improvements would not fully mitigate the intersection impacts identified in the ConnectMenlo EIR; however, these impacts are no longer considered environmental effects under CEQA.

The City of Menlo Park Transportation Impact Fee Nexus Study (dated January 30, 2020) was also reviewed to determine locations where intersection improvement measures were recommended, and costs associated with those improvements were identified. Where feasible, recommended intersection improvements listed in Table 10 generally follow those listed in Appendix C of the City's TIF Nexus Study and note where additional funding may be necessary to construct recommended improvements that are beyond those in the TIF program. However, it should be noted that per OPR's Technical Advisory Guidelines, roadway improvements that are confined to the intersection and do not extend through to the next roadway segment (i.e., roadway remaining at 4-lane capacity, even with

widening of lanes at intersection level), would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis.

Table 10. Summary of Recommended Improvement Measures

No.	Intersection	Jurisdiction	Near Term (2025) Plus Project	Cumulative (2040) Plus Project	Improvement in TIF Fee Program? ¹	Project Responsibility ²
1	Marsh Road/Bayfront Expressway	Menlo Park/State	Modify signal phasing for eastbound right-turning movements to overlap phasing.	Same	Yes - Bayfront Expressway Multimodal Corridor Project	Design/Installation
9	Chrysler Drive/Constitution Drive	Menlo Park	Widen and reconfigure eastbound approach to one eastbound left-turn lane, one eastbound through lane, and one eastbound right-turn lane. ³	Same	No	Design/Installation
10	Chrysler Drive/Jefferson Drive-East Driveway	Menlo Park	Install a traffic signal ⁴	Same	Yes - Menlo Gateway Mitigation	Design/Installation
11	Chrysler Drive/Independence Drive	Menlo Park	Install a traffic signal ⁴	Same	Yes - Chrysler Drive Intersection Improvements	Design/Installation
13	Chilco Street/Constitution Drive	Menlo Park	N/A	Widen and reconfigure eastbound approach to one eastbound left-turn lane, one eastbound through lane, and one eastbound right-turn lane. ³	No	Fair Share (0.54%)
				Widen and reconfigure westbound approach to one westbound left-turn lane, one westbound through lane, and one westbound right-turn lane. ³	No	Fair Share (0.54%)
				Modify signal phasing for east and westbound left-turning movements to protected-permitted phasing	No	Fair Share (0.54%)

Table 10. Summary of Recommended Improvement Measures

No.	Intersection	Jurisdiction	Near Term (2025) Plus Project	Cumulative (2040) Plus Project	Improvement in TIF Fee Program? ¹	Project Responsibility ²
14	Willow Road/ Bayfront Expressway	Menlo Park/ State	Widen the eastbound approach with an additional through lane. Widen the northbound approach with an additional left-turn lane. These physical improvements would not be feasible. ⁵⁵	Same ⁵	Yes - Bayfront Expressway Multimodal Corridor Project	Design/Installation

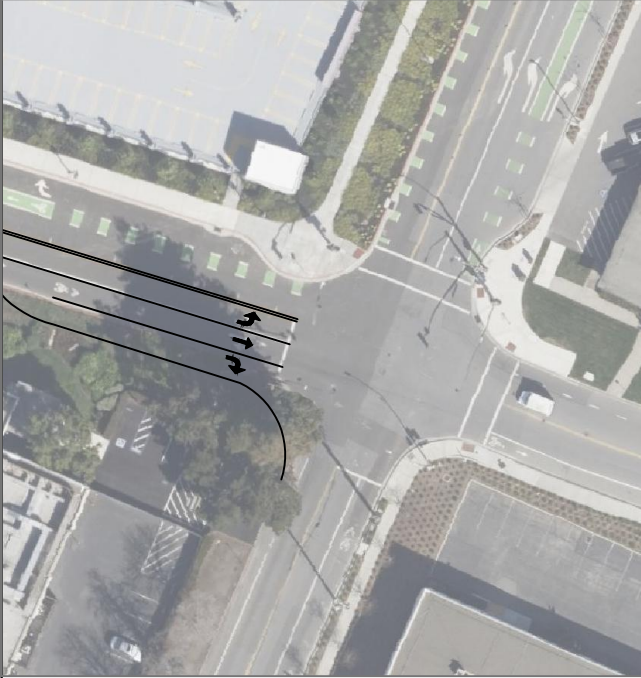
Notes:

- ¹ Improvements included in City of Menlo Park Transportation Impact Fee (TIF) program and noted in the City of Menlo Park TIF Nexus Study (January 3, 2020).
- ² Identifies either the project's responsibility to construct an improvement or contribute fair share towards the implementation of improvements outside of payment to the TIF program. Project responsibility and improvements will be determined in the project's conditions of approval.
- ³ May require right-of-way (ROW) acquisition and/or relocation of utilities and/or mature trees. This approach is also along private ROW.
- ⁴ MUTCD peak hour signal warrants are not met under either the 2025 or 2040 conditions with the addition of project traffic; however, signalization is recommended due to the volume of vehicles approaching on minor streets and potential for queuing along stop-controlled approaches. Additionally, signalization is included as part of the noted TIF projects at these intersections in the City of Menlo Park TIF Nexus Study.
- ⁵ TIF improvements include adaptive traffic signal coordination along the Bayfront Expressway corridor which is likely to improve LOS operations; however, LOS is unable to be quantified at this time. Additionally, physical intersection improvements are considered infeasible due to ROW constraints for both the eastbound approach and the northbound approach.

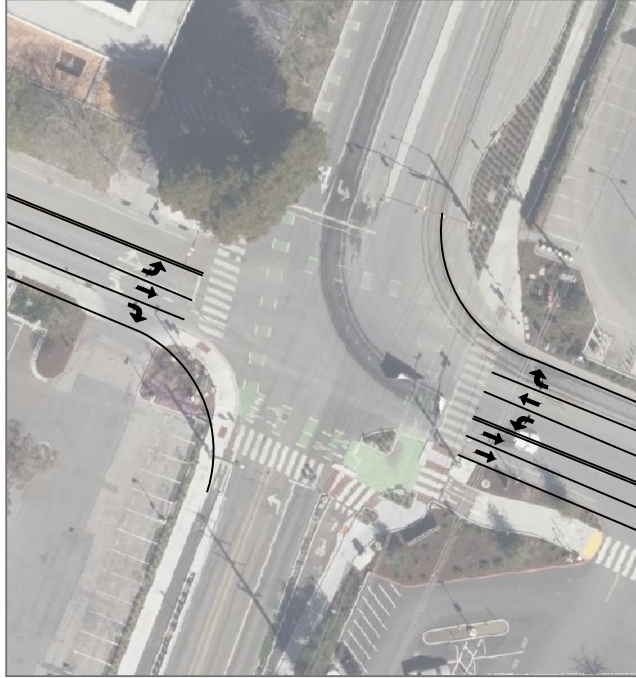
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Nov 14, 2022, 3:13pm - amznaws - p1300 Environmental 13121 123 Independence Drive, Merlo Park/DEUK WORK PRODUCTS/DOCUMENTS/04_Traffic/Graphic/13121_123 Independence Ave Layout_Fig16_Concept

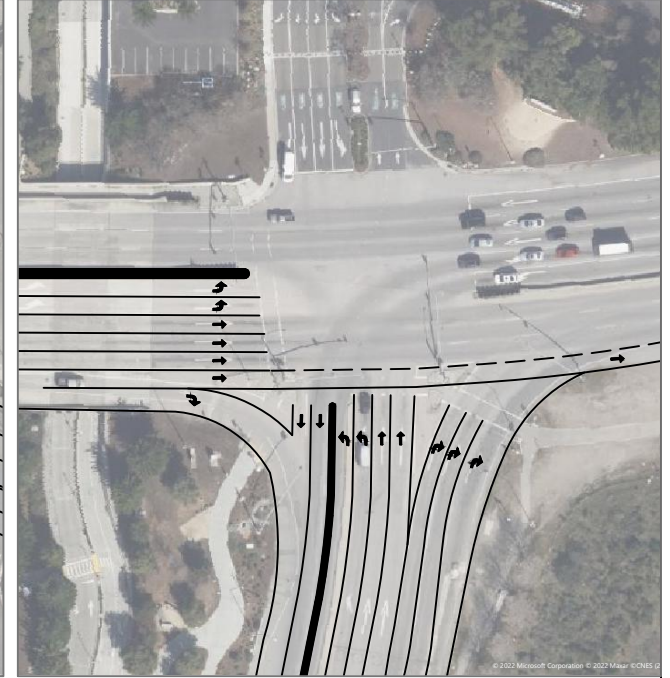
#9 Chrysler Drive/Constitution Drive



#13 Chilco Street/Constitution Drive



#14 Willow Road and Bayfront Expressway



SOURCE: Bing Maps

DUDEK



NOT TO SCALE

Figure 16
Conceptual Geometrics for Recommended Improvement Measures

123 Independence Drive Residential Project

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6 Project Access and Circulation

6.1 Intersection Queuing Analysis

Vehicular queues are discussed for Cumulative (2040) plus Project condition and represents the addition of project traffic to the horizon year traffic volumes of the traffic model utilized. The analysis evaluates whether the project would result in hazards due to design features created by the project (i.e., new project access points/driveways on to public streets).

A queuing analysis was prepared using SimTraffic 11 software at the project's proposed new project access intersections to determine whether proposed storage pockets lengths would be exceeded. The following project driveways were analyzed for queuing impacts:

1. Chrysler Drive/Jefferson Drive – East Driveway
2. Southwest Driveway/Independence Drive
3. Southeast Driveway/Independence Drive
4. North Driveway/Constitution Drive

Per the Highway Capacity Manual 6th Edition, the 95th percentile queue is defined as “the queue length that has only a 5-percent probability of being exceeded during the analysis time period.” All intersections were evaluated based on the Cumulative (2040) plus Project scenario. Detailed vehicular queuing worksheets are included in Appendix E.

As shown in Table 11, none of the calculated 95th percentile (design) queues are forecast to exceed storage capacities within the existing turn pockets. Therefore, the project would not cause a substantial direct or cumulative effect to vehicular queueing.

Table 11. Intersection and Driveway Queuing Summary

Intersection/Driveway	Movement	Vehicle Storage Length ¹	Cumulative (2040) plus Project ²		Exceeds Vehicle Storage Length?		Improvement Warranted?
			AM	PM	AM	PM	
Chrysler Drive/Jefferson Drive-East Driveway	EBLTR ³	200	34	27	No	No	No
	WBLTR ⁴	280	129	122	No	No	No
	NBLTR ⁵	210	22	31	No	No	No
	SBLTR ⁵	390	146	57	No	No	No
Southwest Driveway/Independence Drive	EBL ⁵	775	4	6	No	No	No
	WBTR ⁶	490	9	0	No	No	No
	SBLR ³	200	22	20	No	No	No
Southeast Driveway/Independence Drive	EBL ⁶	490	0	6	No	No	No
	WBTR ⁵	350	12	8	No	No	No
	SBLR ³	200	32	29	No	No	No

Table 11. Intersection and Driveway Queuing Summary

Intersection/Driveway	Movement	Vehicle Storage Length ¹	Cumulative (2040) plus Project ²		Exceeds Vehicle Storage Length?		Improvement Warranted?
			AM	PM	AM	PM	
North Driveway/Constitution Drive	EBTR ⁵	820	803	26	No	No	No
	WBLT ⁵	140	38	38	No	No	No
	NBLR ³	200	69	52	No	No	No

Notes: EBLTR = eastbound shared left-through-right-turn lane; WBLTR = westbound shared left-through-right-turn lane; NBLTR = northbound shared left-through-right-turn lane; SBLTR = southbound shared left-through-right-turn lane; EBL = eastbound left-turn lane; WBTR = westbound through-right-turn lane; SBLR = southbound left-right-turn lane; EBTR = eastbound through-right-turn lane; WBLT = westbound left-through-turn lane; NBLR = northbound left-right-turn lane.

¹ Measured in feet

² Based on 95th percentile (design) queue length in SimTraffic 11

³ Length is measured based on the estimated capacity of the site to queue vehicles

⁴ Length is measured to the TIDE Academy driveway

⁵ Length is measured to the nearest intersection

⁶ Length is measured to the nearest project driveway

Site Circulation

As described previously, the proposed project would provide a vehicular circulation system within each of the four proposed building lots, and would provide access from Independence Drive, Chrysler Drive, Jefferson Drive, and Constitution Drive. Lot B would be accessed from Independence Drive and streets within this lot would not be connected with the adjacent Lot C other than by an emergency vehicle access route crossing the paseo. Lot C would have one 26-foot-wide access driveway off Independence Drive and Lot D would have one 26-foot-wide, access driveway off Chrysler Drive. Streets within Lot C and Lot D would be interconnected and remain accessible from one each other. Lot A would have a single driveway off Constitution Drive providing access into the parking garage. Internal streets that would provide emergency vehicle access would be 26 feet wide while other internal streets and driveways would be 20 feet wide.

All driveways and access to the project site would be designed according to the City's standards and guidelines for construction and coordinated with the City's Public Works Department for work done at existing intersections, such as Chrysler Drive and Jefferson Drive. Vehicular queuing is expected to be minimally affected by the proposed project, and all queues are expected to be within all available storage lengths and would cause nominal changes in existing or future conditions. Specifically, the proposed project would not create vehicular queues or unsafe conditions at the nearby TIDE Academy school located along Jefferson Drive. The TIDE Academy school driveways and drop-off areas would not be impacted by the construction of the proposed project. All current safe routes to school locations would be unaffected and remain safe and available for students. During construction of the proposed project, there would be adequate traffic management signage and minimal construction traffic would utilize Jefferson Drive. Construction truck traffic would remain on the most efficient path of travel to all regional and locally signed truck routes. The proposed project is a residential use that is compatible with the mixed-use nature of the area and would not introduce vehicles, such as farm tractors, heavy machinery and equipment, or oversized haul trucks, that could be incompatible with the other residential, institutional, and commercial uses in the area.

Therefore, as described above, the proposed project would not substantially increase hazards due to a geometric design feature or introduce incompatible uses.

6.2 Gate Stacking Analysis

The north project driveway along Constitution Drive would provide a gated entrance to the parking garage, and the driveway would have approximately 100 feet of length from the edge of the roadway to the secure gated area. A gate stacking analysis was conducted to evaluate the amount of vehicular storage provided to what would be required with this type of parking entrance configuration. According to the project trip distribution and trip assignment, approximately 76 inbound vehicles would arrive inbound to the parking garage in the PM peak hour.

Table 12 displays the gate service rates using the Crommelin method of estimation (Robert Crommelin and Associates 1972).

Table 12. Gate Service Rates

Gate Entrance ¹	Average Headway (seconds/vehicle)	Design Capacity (vehicles/hour)	Maximum Capacity (vehicles/hour)
Coded Car Operated Gate	8.9	340	425

Source: Dudek 2022

Notes:

¹ The type of gate control is from Entrance-Exit Design and Control for Major Parking Facilities (Robert Crommelin and Associates 1972)

Traffic intensity is calculated based on the volume of inbound project vehicles and the rates presented in Table 12. Table 13 presents the traffic intensity at the gate (also known as the volume to service ratio). The inbound peak PM peak hour totaling 76 vehicles was divided by the design capacity service rate of 340 vehicles/hour to compute a traffic intensity of 0.224.

Table 13. Traffic Intensity

Gate Entrance	Traffic Intensity
North Project Driveway/Constitution Drive	$76/340 = 0.224$

Source: Dudek 2022

Based on the gate stacking analysis using the Crommelin methodology above, a stacking reservoir of one vehicle behind the gate is required. Using the standard size of a passenger car as 22-feet in length, the approximately 100 feet of storage length that is provided from the gate entrance to the public roadway (Constitution Drive) is adequate. The proposed project gate would also be evaluated by the City's Public Works Department as part of the standard design review process and would be constructed according to all City specifications.

6.3 Emergency Access

As described previously, the proposed project would provide four vehicular driveways, as well as a paseo connecting the northern and southern portions of the site. The southwest driveway and the southeast driveway located along Independence Drive would provide access to the southern and western portion of the site, while the project driveway located at the intersection of Chrysler Drive/Jefferson Drive would provide access to the eastern portion of the project site. The parking garage entrance driveway along Constitution Drive would also provide emergency vehicle access.

Additionally, emergency vehicle access would be provided via the northern leg of Lot 1, west of the apartment building, which would have a total width of 26 feet and would serve as an emergency vehicle access entrance and exit. A second 26-foot-wide emergency vehicle easement would extend east from the park to Chrysler Drive along the northern edge of Lot D. This emergency vehicle easement would also serve as a pedestrian pathway. The fire district will review the proposed residential site plan, including fire hydrant placement and emergency vehicle access, prior to issuance of building permits. Along Chrysler Drive, Constitution Drive, and Independence Drive, there is adequate width for emergency vehicles to access adjacent properties and where other vehicles can safely pull over and yield to emergency vehicles. The proposed project would not result in inadequate emergency access to adjacent parcels or properties within the study area. The vehicular circulation network would not change and overall emergency response to adjacent properties would remain adequate. Therefore, the proposed project would not result in inadequate emergency access. All future development projects would be required to comply with all City regulations and site plan review as part of the City's project approval process. The Fire Department would review certain projects and together with the policies and goals as outlined in the City's General Plan, would ensure that minimal impacts result to emergency access and there would be no significant cumulative impact to which the project could contribute.

6.4 Parking Assessment

The project would include a total of 552 parking spaces; 510 spaces for residents and 42 spaces for guests. Lot A would be developed with 316 apartments and would offer 336 parking spaces (330 residential spaces and 6 guest spaces) in a parking structure with a single level below grade and a single level at grade. Eight of the residential spaces and one guest space would be Americans with Disabilities Act (ADA) accessible. At the time of construction, 15 percent of the parking stalls in the apartment garage would be equipped with an electric vehicle (EV) charging station and one parking stall per residential unit would be "EV Ready," meaning that conduits would be installed to facilitate adding a charging station in the future.

Each townhome unit would have either a one- or two-car garage. Lot B would be developed with 26 townhomes and would include 73 total parking spaces, 8 of which would be tandem spaces and therefore are not counted toward the number of parking spaces required under the Municipal Code. There would be 44 non-tandem residential parking spaces and 21 guest spaces. The guest spaces would be provided as surface parking along the western site boundary and south of buildings 1 and 2. Lot C would be developed with 18 townhomes and would offer 24 parking spaces (18 residential spaces and 6 guest spaces provided as surface parking within and adjacent to buildings 6 and 7). Lot D would be developed with 72 townhomes and would offer a total of 153 parking spaces (118 residential non-tandem spaces, 26 residential tandem spaces, and 9 guest spaces). Guest spaces would be provided as surface parking in the northeast corner of this lot and north of building 14 as well as the southeast corner of this lot across from building 20 (Appendix B).

According to Municipal Code Section 16.45.080, the minimum spaces per unit is one space, and the maximum spaces per unit is 1.5 spaces. The project would provide a total of 552 parking spaces for 432 dwelling units, totaling approximately 1.3 spaces per unit. Therefore, the project would meet the City's parking requirements. Table 14 breaks down the number of spaces provided for each lot on-site and their resulting parking ratios.

Table 14. Project Parking Space Ratios

Land Use	Size	Spaces Provided	Parking Ratio
Lot A: Apartments	316 DUs	336 spaces	1.06
Lot B: Townhomes	26 DUs	65 spaces ¹	2.50
Lot C: Townhomes	18 DUs	24 spaces	1.33
Lot D: Townhomes	72 DUs	127 spaces ²	1.76
Total	432 DUs	552 spaces	1.28

Source: Dudek 2022

¹ There are 73 total spaces which includes 8 residential tandem spaces that cannot be included per the Municipal Code. Therefore, 65 spaces are counted as “spaces provided”.

² There are 153 total spaces which includes 26 residential tandem spaces that cannot be included per the Municipal Code. Therefore, 127 spaces are counted as “spaces provided”.

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7 Findings and Recommendations

Vehicle Miles Traveled

As discussed in Chapter 4, the estimated project VMT does not account for the project's proposed TDM plan. Without any TDM measures, the project's residential use may cause substantial additional VMT. However, per City Ordinance, the project would be required to implement a TDM Plan achieving a 20% reduction from gross ITE trip generation rates. The Transportation Coordinator shall prepare, Implement, monitor and report a Residential TDM Plan for the project to the satisfaction of the City's Transportation Manager and per the Menlo Park Municipal Code requirements. The TDM Plan reporting shall include annual commute surveys, annual driveway counts and annual reporting to demonstrate that 20 percent peak hour trip reduction requirement has been achieved. If the reduction has not been achieved in the reporting period, the report shall provide additional measures that will be implemented in the coming year in order to achieve the City's requirement.

The required residential TDM Plan will include annual monitoring and reporting requirements on the effectiveness of the TDM program. The project applicant submitted a draft residential TDM Plan (Appendix A), which contains specific measures that would meet this trip reduction requirement. The draft TDM Plan is subject to City review and approval. If the annual monitoring finds that the TDM reduction is not met, the TDM coordinator will be required to work with City staff to detail next steps to achieve the TDM reduction. With the implementation of the required residential TDM Plan, the project's VMT impact would be less than significant.

Level of Service Analysis

Existing Conditions

As discussed in Chapter 5.1, all of the study area intersections are currently operating at satisfactory levels of service (LOS D or better) under existing conditions per City standards, with the exception of the following intersections:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM peak hour (*signalized*)
- #9 (Chrysler Drive/Constitution Drive) – LOS E in AM peak hour (*signalized*)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour; LOS E in PM peak hour (*unsignalized*)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (*signalized*)
- #15 (University Avenue/Bayfront Expressway) – LOS F in PM peak hour (*signalized*)

Near-Term (2025) plus Project Conditions

Under Near-Term (2025) plus Project conditions, the following intersections would exceed the thresholds identified in the City's TIA guidelines and increase the average critical movement delay by 0.8 seconds or more during AM and/or PM peak hours:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM and PM peak hours (*signalized*)
- #9 (Chrysler Drive/Constitution Drive) – LOS F in AM peak hour; LOS E in PM peak hour (*signalized*)
- #10 (Chrysler Drive/Jefferson Drive – East Driveway) – LOS F in AM peak hour (*unsignalized*)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour; LOS E in PM peak hour (*unsignalized*)

- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (signalized)

The Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant was performed at the unsignalized intersections (#10 and #11) and is not met in either peak hour. However, as noted in Table 10, signalization is included as part of the noted TIF projects at these intersections in the City of Menlo Park TIF Nexus Study.

Recommendations

A summary of recommended improvements at the intersections identified above is provided in Table 10 and summarized below:

- #1 (Marsh Road/Bayfront Expressway)
- Modify signal phasing for eastbound right-turning movements to overlap phasing#9 (Chrysler Drive/Constitution Drive)
 - Widen and reconfigure eastbound approach to one eastbound left-turn lane, one eastbound through lane, and one eastbound right-turn lane
- #10 (Chrysler Drive/Jefferson Drive – East Driveway)
 - Install a traffic signal (included in TIF Nexus Study)
- #11 (Chrysler Drive/Independence Drive)
 - Install a traffic signal (included in TIF Nexus Study)
- #14 (Willow Road/Bayfront Expressway)
 - Widen the eastbound approach with an additional through lane. Widen the northbound approach with an additional left-turn lane. These physical improvements would not be feasible.
 - Therefore, there are no feasible physical improvements possible (improvements in the TIF Nexus Study include adaptive traffic signal coordination along the Bayfront Expressway corridor which is likely to improve LOS operations)

Cumulative (2040) plus Project Conditions

Under Cumulative (2040) plus Project conditions, the following intersections would exceed the thresholds identified in the City's TIA guidelines and increase the average critical movement delay by 0.8 seconds or more during AM and/or PM peak hours:

- #1 (Marsh Road/Bayfront Expressway) – LOS E in AM peak hour; LOS F in PM peak hour (signalized)
- #9 (Chrysler Drive/Constitution Drive) – LOS F in AM and PM peak hours (signalized)
- #10 (Chrysler Drive/Jefferson Drive – East Driveway) – LOS F in AM peak hour; LOS E in PM peak hour (unsignalized)
- #11 (Chrysler Drive/Independence Drive) - LOS F in AM peak hour (unsignalized)
- #13 (Chilco Street/Constitution Drive) – LOS F in AM and PM peak hours (signalized)
- #14 (Willow Road/Bayfront Expressway) – LOS F in AM and PM peak hours (signalized)

The Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant was performed at the unsignalized intersections (#10 and #11) and is not met in either peak hour as with Near-Term (2025) conditions. However, as noted in Table 10, signalization is included as part of the noted TIF projects at these intersections in the City of Menlo Park TIF Nexus Study.

Recommendations

The same improvement measures noted under Near-Term (2025) plus Project conditions are recommended for noncompliant intersections noted above, where overlap occurs. A summary of any additional improvements warranted under Cumulative (2040) plus Project conditions is provided in Table 10 and summarized below:

- **#13 (Chilco Street/Constitution Drive)**
 - Widen and reconfigure eastbound approach to one eastbound left-turn lane, one eastbound through lane, and one eastbound right-turn lane
 - Widen and reconfigure westbound approach to one westbound left-turn lane, one westbound through lane, and one westbound right-turn lane
 - Modify signal phasing for east and westbound left-turning movements to protected-permitted phasing
 - The project's fair share percentage is approximately 0.54%

Pedestrian and Bicycle Access

As discussed in Chapter 2.3, no deficiencies to pedestrian or bicycle facilities were identified in the study area that would restrict access to or from the project site. The project will work with City staff to identify other necessary pedestrian and bicycle improvements as needed. The proposed project would provide four driveways, as well as a paseo connecting the northern and southern portions of the site. The closest designated bicycle facility is a Class III Bike Route along Independence Drive, located immediately south of the project site. In addition, an existing Class I Bike Path is provided along Bayfront Expressway and Class II Bike Lanes are present on Constitution Drive and Chrysler Drive. As indicated in the TMP, proposed bicycle facilities in the vicinity of the project site include an extension of the Class II Bike Lane along Haven Avenue Drive and a Class II Bike Lane along Marsh Road, from Bayfront Expressway to Bay Road.

Project Site Access and Circulation

As discussed in Chapter 6, with the construction of the proposed project, there would be four driveways, two along Independence Drive, one along Chrysler Drive, and one along Constitution Drive, leading to parking garage. Lot B would be accessed from Independence Drive and streets within this lot would not be connected with the adjacent Lot C other than by an emergency vehicle access route crossing the paseo. Lot C would have one 26-foot-wide access driveway off Independence Drive and Lot D would have one 26-foot-wide, access driveway off Chrysler Drive. Streets within Lot C and Lot D would be interconnected and remain accessible from one each other. Lot A would have a single driveway off Constitution Drive providing access into the parking garage. Internal streets that would provide emergency vehicle access would be 26 feet wide while other internal streets and driveways would be 20 feet wide.

All driveways and access to the project site would be designed according to the City's standards and guidelines for construction and coordinated with the City's Public Works Department for work done at existing intersections, such as Chrysler Drive and Jefferson Drive. Vehicular queuing is expected to be minimally affected by the proposed project, and all queues are expected to be within all available storage lengths and would cause nominal changes in existing or future conditions. Specifically, the proposed project would not create vehicular queues or unsafe conditions at the nearby TIDE Academy school located along Jefferson Drive. The TIDE Academy school driveways and drop-off areas would not be impacted by the construction of the proposed project. All current safe routes to school locations would be unaffected and remain safe and available for students. During construction of the proposed project, adequate signage and minimal construction traffic would utilize Jefferson Drive. Construction truck traffic would remain on the most efficient path of travel to all regional and locally signed truck routes.

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<https://www.samtrans.com/routes/270>

Appendix A

Transportation Demand Management Plan



HEXAGON TRANSPORTATION CONSULTANTS, INC.

Transportation Demand Management Plan

123 Independence Drive Residential Development in Menlo Park

Prepared for:

City of Menlo Park on behalf of The Sobrato Organization

October 19, 2021

Hexagon Transportation Consultants, Inc.

Hexagon Office: 4 North Second Street, Suite 400

San Jose, CA 95113

Hexagon Job Number: 21LJ07

Phone: 408.971.6100

Document Name: 123 Independence Drive TDM Plan.docx

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Areawide Circulation Plans Corridor Studies Pavement Delineation Plans Traffic Handling Plans Impact Fees Interchange Analysis Parking Studies
Transportation Planning Neighborhood Traffic Calming Traffic Operations Traffic Impact Analysis Traffic Signal Design Travel Demand Forecasting

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1.

Introduction

Transportation Demand Management (TDM) is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle (SOV) trips to help relieve traffic congestion, parking demand, and air pollution problems. The purpose of TDM is to promote more efficient utilization of existing transportation facilities, and to ensure that new developments are designed to maximize the potential for sustainable transportation usage. This Plan has been prepared for the proposed residential development at 123 Independence Drive in Menlo Park, California. In order to propose effective and appropriate TDM measures, this Plan has been developed based on the project's size, location, and land use. This plan has been developed to satisfy Section 16.45.090 of the City of Menlo Park Municipal Code, which requires a TDM plan to be prepared with the goal of achieving at least a 20 percent reduction below standard generation rates for uses on the project site. In addition, the City/County Association of Governments (C/CAG) adopted updated TDM policies (September 1, 2021) that require TDM plans for projects of this size.

Project Description

The project is located at 123 Independence Drive in the R-MU-B (Residential Mixed Use-Bonus) zoning district in Menlo Park, California (see Figure 1). The project will demolish the five existing office and industrial buildings (a total of approximately 103,900 square-feet) that currently occupy the site and will construct a 5-story apartment building with 316 rental apartments and 116 for-sale townhomes. Vehicular access to the project site will be provided via four driveways: one driveway to the apartment parking garage from Constitution Drive, two driveways to the townhomes from Independence Drive, and one driveway to the townhomes from Chrysler Drive (see Figure 2).

A parking structure with a single level below-grade and a single level at-grade with total a total of 336 parking spaces is proposed for the apartments. A ground-level parking garage will be provided for each of the townhome units. Long-term and short-term bicycle parking will be provided throughout the site. A total of 522 bike parking spaces (including 474 long-term parking spaces and 48 short-term parking spaces) will be provided for the proposed apartments, and 192 bike parking spaces (174 long-term spaces and 18 short-term spaces) will be provided for the townhomes.

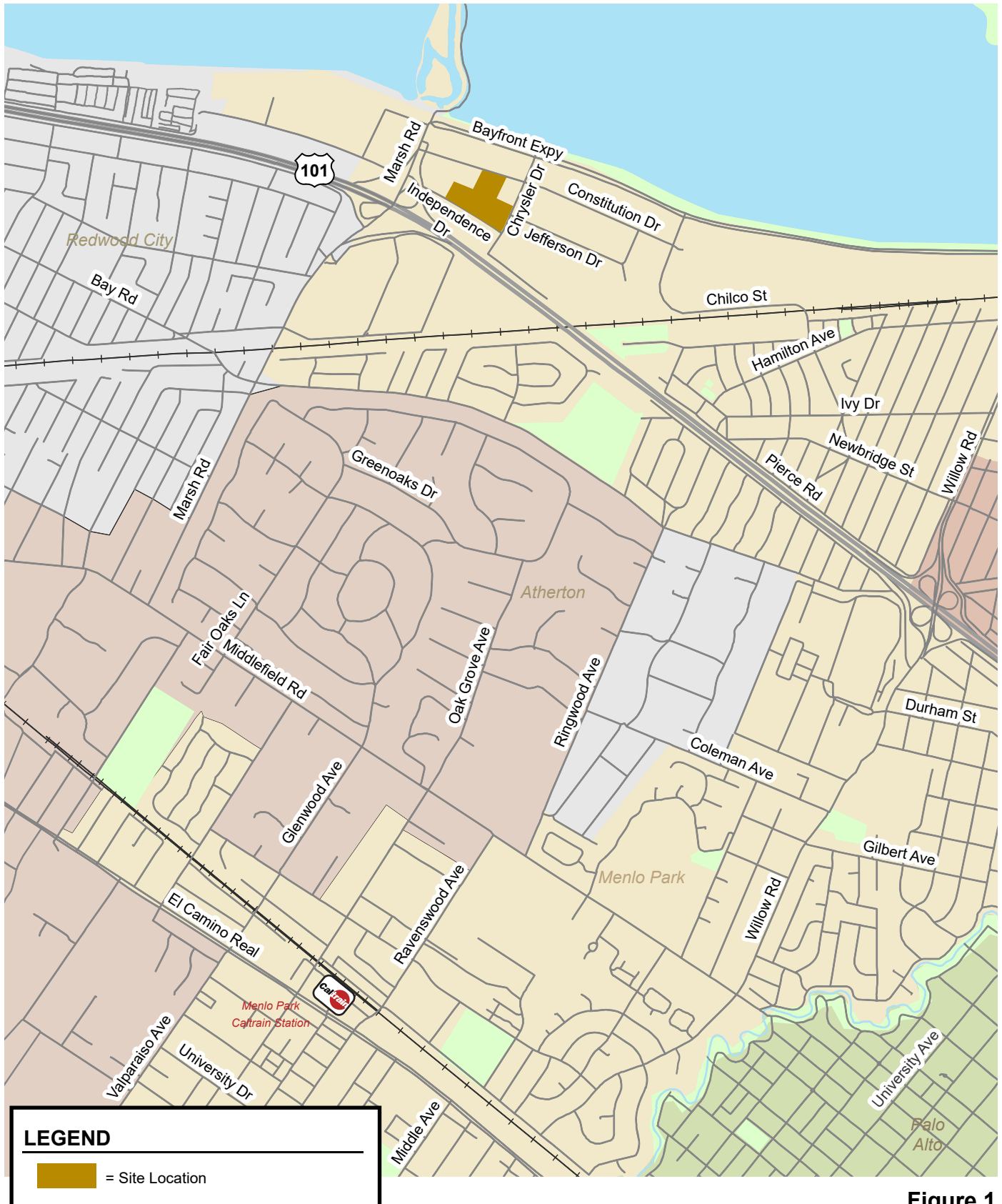


Figure 1
Site Location



Figure 2
Site Plan

Menlo Park TDM Requirement for R-MU Residential Mixed-Use District

The City of Menlo Park requires that all new projects involving a change of use of 10,000 or more square feet of gross floor area in the Residential Mixed-use (R-MU) zoning district prepare TDM plans that will reduce vehicle trips by 20 percent from standard trip generation rates (Menlo Park Municipal Code Section 16.45.090). This plan has been prepared with the goal of achieving at least a 20 percent reduction in daily trips.

The trip generation rates published in the Institute of Transportation Engineers' (ITE) manual entitled *Trip Generation, 10th Edition* (2017) for Multifamily Mid-Rise Housing (Land Use 221) were used for this study. Multifamily Mid-Rise Housing includes housing developments between 3 to 10 floors. Before TDM reductions, the proposed project is estimated to generate a total of 2,350 daily trips with 156 trips during the AM peak hour and 190 trips during the PM peak hour.

As shown in Table 1, in order to meet the City's 20 percent reduction requirement, at least 470 daily trips will need to be eliminated through implementation of the various TDM measures. Stated conversely, the project will be required to generate no more than 1,880 daily trips.

Table 1
Trip Generation Estimates for the Residential Development at 123 Independence Drive

Land Use	Size	Daily		Trip Rate	AM Peak Hour			Trip Rate	PM Peak Hour		
		Rate	Trips		Rate	Trips			Rate	Trips	
						In	Out			Total	In
Proposed Land Uses											
Multifamily High-Rise Housing ¹	432 d.u.	5.44	2,350	0.36	41	115	156	0.44	116	74	190
Total Project Trips			2,350		41	115	156		116	74	190
Required TDM Reduction (20%)			(470)		(8)	(23)	(31)		(23)	(15)	(38)
Total Project Trips (with TDM Trip Reduction)			1,880		33	92	125		93	59	152
Existing Use											
Office ²	103.9 ksf	9.74	1,012	1.16	104	17	121	1.15	19	100	119
Net New Project Trips			868		(71)	75	4		74	(41)	33
Source: Institute of Transportation Engineers' Trip Generation Manual, 10th Edition, 2017.											
Notes:											
¹ Land Use 221: Multifamily High-Rise Housing (average trip rates , expressed in trips per dwelling unit (d.u.)											
² . Land Use Code 710: General Office Building (average rates, expressed in trips per 1,000 s.f. gross floor area)											

2.

Transportation Facilities and Services

Transportation facilities and services that support sustainable modes of transportation include commuter rail, buses and shuttle buses, high-occupancy vehicle (HOV) lanes, bicycle facilities, and pedestrian facilities. This chapter describes existing facilities and services near the project site that will support the TDM measures contained in this plan. The existing transit service in the project vicinity is described below and shown on Figure 3. Information on nearby roadways is also included in order to provide a more comprehensive description of the nearby transportation network.

Roadway Network

Regional access to the project site is provided via US 101 and State Route 84.

US 101 extends to the northwest through San Francisco and to the southeast through San Jose. Within Menlo Park, this freeway has three mixed-flow travel lanes, one high-occupancy vehicle (HOV) lane, and one auxiliary lane in each direction. Access to and from the project study area is provided via a full-access interchange at Marsh Road.

Bayfront Expressway (SR 84) is a six-lane expressway that extends along the northern edge of Menlo Park. SR 84 extends eastward across the Dumbarton Bridge into Alameda County and westward through San Mateo County. Bayfront Expressway provides access to the project site via Chrysler Drive.

Local access to the site is provided via Marsh Road, Chrysler Drive, Constitution Drive, and Independence Drive. These roadways are described below and shown in Figure 1 in the previous chapter.

Marsh Road extends from SR 84/Bayshore Expressway in the north to Middlefield Road in the south. In the project area, Marsh Road is a four-lane thoroughfare between Scott Drive and Bayfront Expressway. The posted speed limit in the project area is 35 mph. Sidewalks are present on both sides of Marsh Road between Bayfront Expressway and Scott Drive. Marsh Road becomes a mixed-use collector between Scott Drive and Bay Road. A Class III bike route is designated between Bay Road and Scott Drive. On-street parking is permitted on the west side of Marsh Road between Fair Oaks Avenue and Rolison Road. Access to the project site is provided via Independence Drive and Constitution Drive.

Independence Drive is a two-lane local roadway that includes a sharp turn near its intersection with Marsh Road. The speed limit on Independence Drive is 25 mph. A multipurpose trail is present on the west side of Independence Drive. There is a Class III bike route on Independence Drive. Independence Drive provides direct access to the project site.

Constitution Drive is a two-lane local roadway with a speed limit of 35 mph. It begins at Marsh Road and terminates at Chilco Street. Constitution Drive has sidewalks except on the east side between Chrysler Drive and Chilco Street and the west side between Marsh Road and Chrysler Drive. There are existing Class II bike lanes on Constitution Drive between Marsh Road and Chilco Street. Constitution Drive provides direct access to the project site.

Chrysler Drive is a two-lane local roadway that is perpendicular to Constitution Drive and Jefferson Drive. It extends from Commonwealth Drive to Bayfront Expressway (SR 84). There are sidewalks on both sides of Chrysler Drive except on the north side between Jefferson Drive and Constitution Drive. Class II bike lanes are present for the entire street, with a short segment of bike route just south of Constitution Drive. On-street parking is permitted. The speed limit on Chrysler Drive is 25 mph. Chrysler Drive provides direct access to the project site.

Caltrain Commuter Rail

Caltrain provides commuter rail service between San Francisco and San Jose, with limited service to Gilroy during commute hours. The closest Caltrain station to the project site is the Menlo Park Station, located on Merrill Street between Oak Grove Avenue and Ravenswood Avenue, near El Camino Real.



The Menlo Park Station is located 3.0 miles from the project site. This is an approximately 15-minute bike ride. Also, the Marsh Road Shuttle (described below) currently offers free shuttle service between the project site and the Menlo Park Caltrain Station with timed connections to trains during the commute peak periods.

Marsh Road Shuttle

Primary access to the project site from the Menlo Park Caltrain station is provided by the Marsh Road Shuttle, which is a free shuttle service with timed connections to many of the AM and PM peak period trains in both the northbound and southbound directions. The shuttle operates in a loop through the Marsh Road business park. There are three bus stops surrounding the project site located at 1) the intersection of Chrysler Drive/Independence Drive; 2) the intersection of Chrysler Drive/Constitution Drive; and 3) 110 Constitution Drive. All three stops are within walking distance of the project site. Based on the schedule, the shuttle takes 14 to 16 minutes to travel from the Caltrain station to these stops. In the afternoon, because the project site is one of the first stops in the loop, the shuttle takes about 33 minutes to travel from the stops to the Caltrain station.

The Marsh Road Shuttle is funded jointly by the City of Menlo Park, the Bay Area Air Quality Management District (BAAQMD), the Peninsula Corridor Joint Powers Board (Caltrain), the San Mateo County Transportation Authority, and local employers. The shuttle is free and open to everyone.

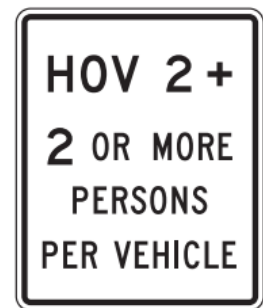
SamTrans Bus Service

SamTrans Route 270, the Redwood City Loop, provides service to the Marsh Road/Bayfront Expressway office area. A bus stop is located on Haven Avenue near Marsh Road, approximately 0.5 miles from the project site. Route 270 operates in a loop between the Redwood City Caltrain Station, Redwood Plaza/City Hall, Kaiser Hospital, southbound along Broadway and Bay Road, across US 101 to the Marsh Road business park area, northbound along Bayshore Road, back across US 101 on Maple Street, and then returning to the Redwood City Caltrain Station. Route 270 operates with 60-minute headways on weekdays and Saturdays.



HOV Lanes

High-Occupancy Vehicle (HOV) lanes, also known as diamond or carpool lanes, restrict use to vehicles with two or more occupants (carpool, vanpool, and buses), motorcycles, and ILEVs (subcategory of clean-fuel vehicles that have essentially no fuel vapor emissions) during the morning (5:00 to 9:00 AM) and evening (3:00 to 7:00 PM) commute periods. HOV lanes are present on US 101 within the City of Menlo Park.



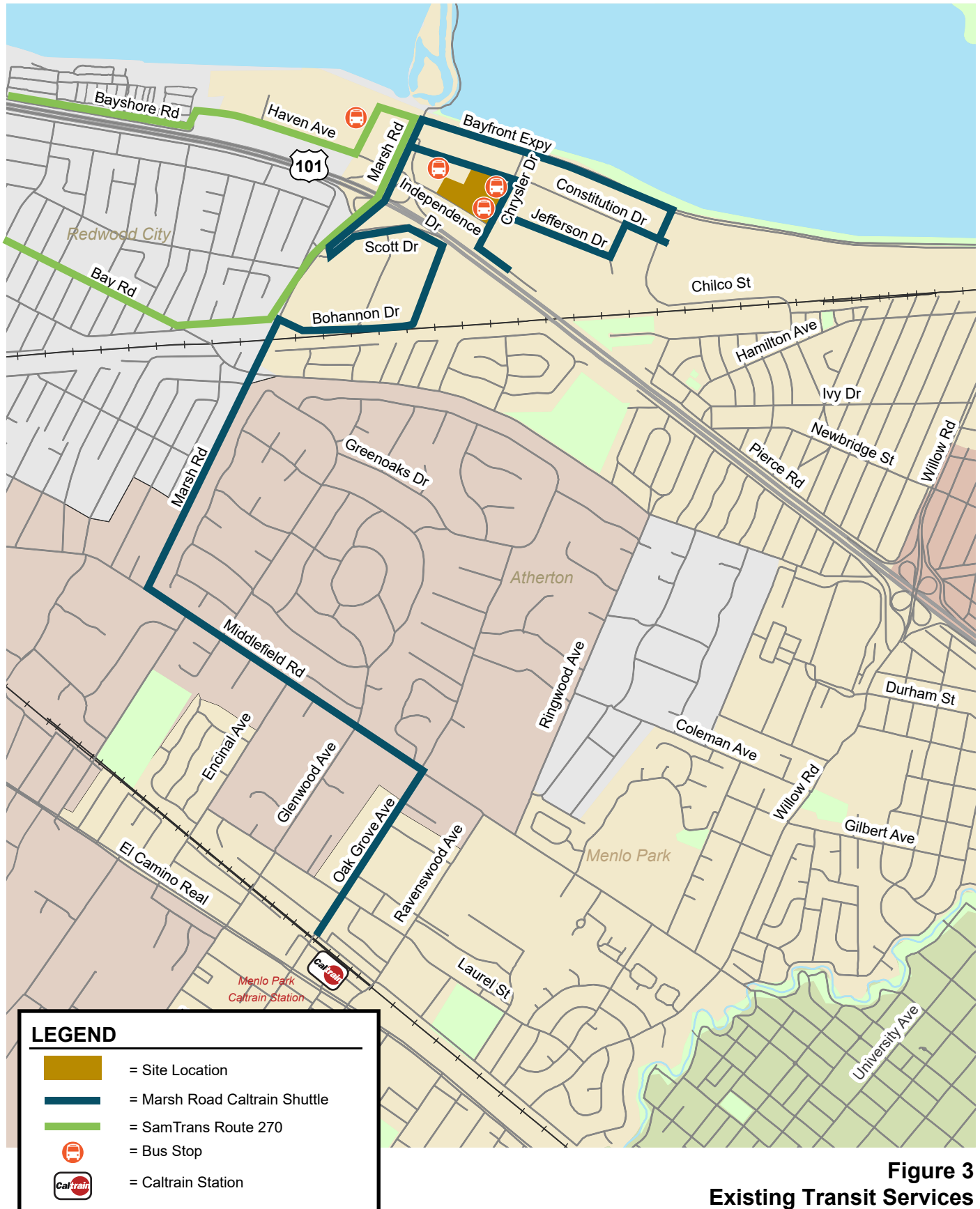


Figure 3
Existing Transit Services

Bicycle Facilities

Bicycle facilities are an important component of the City of Menlo Park's transportation network. The City's bikeways are classified as Class I, Class II, or Class III facilities, as follows:

- Class I Bicycle Path – bike paths within exclusive right-of-way, sometimes shared with pedestrians
- Class II Bicycle Lane – bike lanes for bicycle use only that are striped within the paved area of roadways
- Class III Bicycle Route – bike routes are shared with motor vehicles on the street. Class III bikeways may also be defined by a wide curb lane and/or use of a shared use arrow stencil marking on the pavement, known as a “sharrow”



Bike Paths:

- Bayfront Expressway between Marsh Road and Marshlands Road across the Dumbarton Bridge
- Chilco Street between the Menlo Park Fire District Station No. 77 and Constitution Drive
- The Bay Trail along University Avenue north of Purdue Avenue
- Recreational trails at Bedwell Bayfront Park, Facebook along Hacker Way, and on the Bay Trail near Ravenswood Preserve

Bike Lanes:

- Haven Avenue between Sleepy Hollow Ln and Haven Court
- Chrysler Drive between Independence Drive and Bayfront Expressway
- Constitution Drive between Independence Drive and Chilco Street
- Chilco Street between Constitution Drive and Bayfront Expressway
- Willow Road between Bayfront Expressway and Bay Road south of US 101
- University Avenue between Donohoe Street and Bayfront Expressway
- Bay Road on the south side of US 101
- Jefferson Drive between Chrysler Drive and Constitution Drive

Bike Routes:

- Independence Drive between Constitution Drive and Chrysler Drive
- Market Place between Hamilton Avenue and Newbridge Street
- Ivy Drive between Market Place and Almanor Avenue
- Hamilton Avenue between Modoc Avenue and Chilco Street
- Newbridge Street in the westbound direction between Bay Road and Menalto Avenue
- Hacker Way

The following improvements to the City's bicycle facilities have been proposed in its Comprehensive Bicycle Development Plan:

- Class III bike routes are planned for Ringwood Avenue between Bay Road and Van Buren Road, Van Buren Road between Iris Lane and Bay Road, and Ivy Drive between Market Place and Willow Road.
- A new bicycle and pedestrian bridge over the Atherton Channel is planned to extend the bike lanes and sidewalks on Haven Avenue to Marsh Road, as part of the Haven Avenue

Streetscape Project. The Haven Avenue Streetscape Project connects Menlo Park, San Mateo County, and Redwood City residents and employees.

Bike lanes on Marsh Road and the Independence Drive Connector Path are identified as long-term projects. The Marsh Road bike lanes are also identified as proposed improvements in the San Mateo County Comprehensive Bicycle and Pedestrian Plan. It is not known when these two proposed improvements will be constructed.

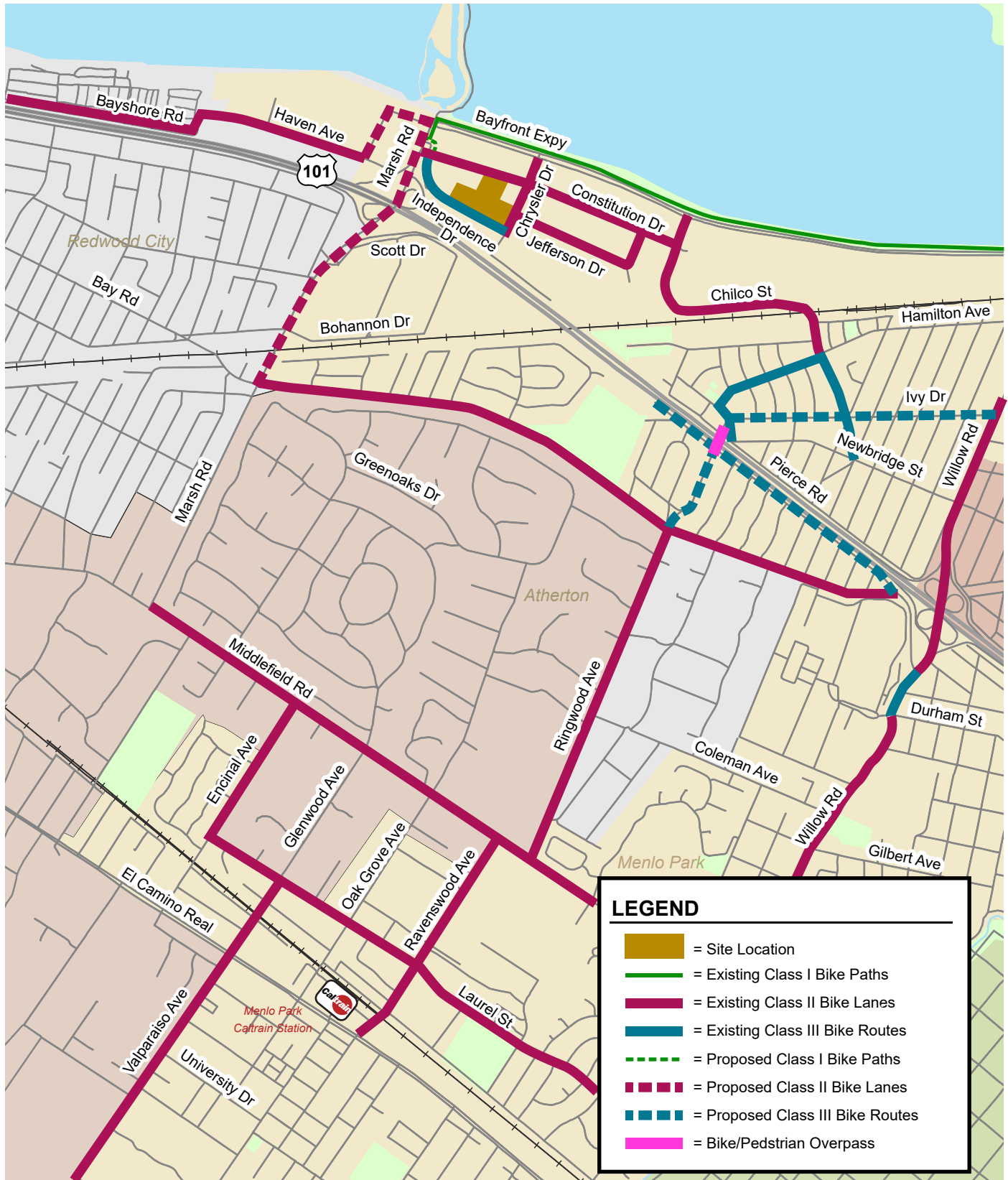


Figure 4
Existing and Proposed Bicycle Facilities

Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. Roadways providing pedestrian access to the project site include Independence Drive, Constitution Drive, and Chrysler Drive.

Crosswalks with pedestrian signal heads and push buttons are found on one or more approaches at all the signalized study intersections. The intersection at Chrysler Drive and Constitution Drive has crosswalks on east and south approaches. The intersections at Chrysler Drive/Bayfront Expressway and at Marsh Road/Bayfront Expressway both have crosswalks on all approaches.

As the adjacent land parcels redevelop, new sidewalks are planned for the street frontages, which will improve pedestrian facilities in the vicinity of the project. The project will help complete the missing sidewalks on Independence Drive and Constitution Drive along the project frontage.

As described in the preceding section on bicycle facilities, the Haven Avenue Streetscape Project also includes pedestrian crossing improvements to the Marsh Road-Haven Avenue-Bayfront Expressway intersection, which will improve the overall pedestrian network in the area east of US 101. The improvements include widened sidewalks, replacement of curb ramps to comply with current ADA standards, realigning the existing crosswalk on the northwest (Haven Avenue) leg of the intersection, and improving the existing median to provide a crossing refuge island.



3.

Proposed TDM Measures

This chapter describes Transportation Demand Management (TDM) measures that will be implemented by the proposed project.

This plan has been developed to meet the 20 percent trip reduction requirement set forth in Sec.16.45.090 of the Menlo Park municipal code¹ for the residential mixed-use zoning district.

The TDM measures to be implemented by the project include services, incentives, actions, and planning and design features related to the attributes of the site design and site amenities. Such design features encourage walking, biking, and use of transit. Some of the recommended TDM measures are programs that will be created and implemented by the building manager. Table 2 presents a summary of the TDM measures in this plan. An indication of who will have primary responsibility for implementing each measure is also shown on the table.

¹ City of Menlo Park Municipal Code, Section 16.45.090, "Transportation demand management." Adopted December 6, 2016.

Table 2
Recommended TDM Measures

TDM Measure	Applies to Apartment Residents, Townhome Residents, or Both	Implementation Responsibility
Program Administration		
Designating a Transportation Coordinator	Both	Property Manager
Online Kiosk/TDM Information Board ¹	Both	Transportation Coordinator
Transportation Information Packets	Both	Transportation Coordinator
Trip Planning Assistance	Both	Transportation Coordinator
Program Monitoring and Reporting		
Annual Resident Surveys	Both	Transportation Coordinator
Target Drive-alone Mode Share Monitoring	Both	Transportation Coordinator
Carpool and Vanpool Programs		
511 Ridematching Service	Both	Available to public
Incentives for New Carpools/Vanpools	Both	Available to public
Bicycle Facilities		
Bicycle Parking	Both	Building developer
Bicycle Repair Station	Both	Building developer
Ebike and Cargo Bicycle	Apartment Residents	Building developer
Resources (bikeway maps & other info)	Both	Transportation Coordinator
Pedestrian Facilities		
Pedestrian Scale Lighting	Both	Building developer
New Sidewalks	Both	Building developer
Other On-Site Amenities		
Fitness Room and Club Room	Apartment Residents	Building developer
High-Bandwidth Internet Connection	Apartment Residents	Building developer
Pet Spa	Apartment Residents	Building developer
Pool and Spa	Apartment Residents	Building developer
Transit Elements		
Transit Subsidy	Both ²	Building developer
Unbundled Parking	Apartment Residents	Building developer
Notes:		
1. The building developer will have initial responsibility for creating an online kiosk and appointing the Transportation Coordinator. After the building is occupied, the Transportation Coordinator will have ongoing responsibility for the online kiosk and various program elements.		
2 Transit subsidies are not practical for ownership units (Townhomes) on an on-going basis. However, a free one-year transit pass will be given to each new owner upon original purchase from the developer.		

TDM Administration and Promotion

Transportation Coordinator

A Transportation Coordinator will be assigned to provide information regarding alternative modes of transportation to residents of the project. The Transportation Coordinator will be designated by the building developer, the property manager, or any subsequent building owner.

The Transportation Coordinator's responsibilities will include updating information on the online information board/kiosk, providing trip planning assistance and/or ride-matching assistance to

residents who are considering an alternative mode for their commute, and managing the annual surveys. The Transportation Coordinator will maintain a supply of up-to-date transit schedules and route maps for SamTrans and Caltrain and be knowledgeable enough to answer residents' TDM program-related questions. The Transportation Coordinator will distribute a carpool/vanpool matching application to all residents as part of the New Resident Information packets. The application will match residents who live at the project site who may be able to carpool or vanpool together.

Online Transportation Kiosk

This TDM plan recommends establishing an "online kiosk" with transportation information that residents could access from their smart phones, their homes, or anywhere else. This online kiosk can be available on the project website.

By allowing someone to have all the information about transportation alternatives and TDM programs available to them in a single online location, people will be more likely to refer to this information from home. The project developer or property manager will have responsibility for setting up and maintaining this online information center. This website will include site-specific information about all the measures, services, and facilities discussed in this plan. In addition, this online information center will include:

- A summary of SamTrans, Caltrain, and nearby shuttle services and links to further information about their routes and schedules.
- Information about ride matching services (511.org and on-site ride matching) and the incentive programs available to carpools and vanpools.
- Information about services such as Uber, Lyft, and other on-demand transportation services.
- A local bikeways map and bicycling resources on 511.org.
- A link to the many other resources available in the Bay Area, such as the 511 Carpool Calculator, the 511 Transit Trip Planner, real-time traffic conditions, etc.

Resident Orientation (Welcome) Packet

New residents will be provided transportation information packets. This packet will include information about transit maps/schedules (Caltrain, SamTrans, and shuttle services), location of bus stops, bike maps, ride matching services, transit planning resources, and bicycle parking on site. Also included in the packet will be information regarding how to contact the Transportation Coordinator, who can provide information regarding alternative modes of transportation to residents.

The resident orientation (welcome) packet will provide a quick, easy-to-read announcement of the most important features of the TDM program for residents to know about immediately and a message that the building values alternative modes of transportation and takes their commitment to supporting alternative transportation options seriously. For example, it will include a flyer announcing some highlights of the TDM program and where to find more information online.

Bicycle and Pedestrian Amenities

Bicycle Parking

Providing secure bicycle parking encourages bicycle commuting. A total of 522 bike parking spaces (including 474 long-term parking space and 48 short-term parking spaces) will be provided for the proposed apartments and 192 bike parking spaces (174 long-term spaces and 18 short-term spaces) will be provide for the proposed townhomes. Electrical outlets will be included in the bike rooms for charging Ebikes.

The Transportation Coordinator will monitor the usage of the bicycle parking facilities and will also tabulate the mode share for bicycles based on survey results.

Bicycle Repair Station

In addition to bicycle parking, the project includes a bike repair station next to the bike storage room, which will provide a singular point where bicyclists can share information on routes, commuting, and maintenance practices to help generate a stronger community that is more engaged in bicycling as a mode of transportation.

On-Site Ebike and Cargo Bicycle Share Program

The project will provide on-site ebikes and cargo bicycles for the apartment tenants to check-out and use. These ebikes and cargo bicycles should be stored in a secured common space that can be checked out by tenants. Hexagon recommends 5 ebikes and one cargo bike to start. This number may be adjusted up or down as needed.

Bicycle Resources

The following resources are available to bicycle commuters through 511.org. These resources will be noted on the project's online information center, in order to make residents aware of them.

- Free Bike Buddy matching
- Bicycle maps
- Bicycle safety tips
- Information about taking bikes on public transit
- Location and use of bike parking at transit stations
- Information on Bike to Work Day
- Tips on selecting a bike, commute gear, and clothing
- Links to bicycle organizations

Pedestrian Design Elements

The project will complete the missing sidewalks on Independence Drive and Constitution Drive along the project frontage. The project will build a public park between Lot B and C, and pedestrian paths will connect the park with the sidewalk along Independence Drive and Constitution Drive. Within the site, pedestrian paths are shown throughout the project site, providing connections between sidewalks on the adjacent streets, the proposed buildings, parking garages, and other amenities on-site.

Passenger Loading for Rideshare Vehicles

The project is planning to provide a passenger loading zone on site near the apartment building to encourage residents and guests to utilize rideshare services/programs (e.g., Uber, Lyft, Scoop, Waze Carpool, etc.) and reduce parking demand.

Onsite Amenities for the Apartment Building

Fitness Room, Club Room, Pool, and Spa

The project will include a pool, a fitness room, and a club room in the apartment building for use by residents for socializing and recreation. The project will also include a pet spa. These amenities will

encourage residents to stay on site for these services, reducing the number of trips that are required to be made.

Electric Vehicle Charging Stations

The apartment garage will include a total of 335 parking spaces, of which 51 spaces will be equipped with electric vehicle charging stations. While EV charging station parking spaces will not directly reduce any peak-hour trips, the designated Clean Air Vehicle spaces provide a prominent visual message that the project values a reduction in air pollution.

High-Bandwidth Internet Connection

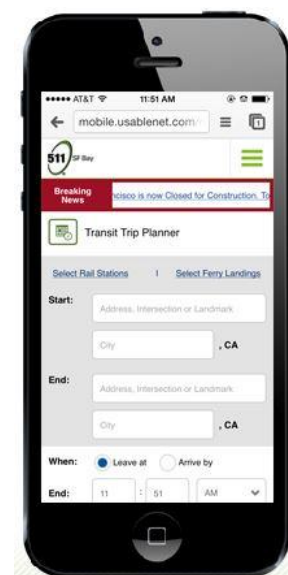
The apartment residential units will include high-bandwidth internet connections to facilitate telecommunicating. Access to high-bandwidth internet connections will allow residents to work from home and therefore reduce the number of commute trips to and from project site.

Carpool and Vanpool Programs

511 Ride Matching Assistance

511 RideMatch

The 511 RideMatch service provides an interactive, on-demand system that helps commuters find carpools, vanpools or bicycle partners. The Transportation Coordinator, in conjunction with the future building manager contacts, will promote the on-line 511 service to residents. This free car and vanpool ride matching service helps commuters find others with similar routes and travel patterns with whom they may share a ride. Registered users are provided with a list of other commuters near their employment or residential ZIP code along with the closest cross street, email, phone number, and hours they are available to commute to and from work. Participants are then able to select and contact others with whom they wish to commute. The service also provides a list of existing car and vanpools in their residential area that may have vacancies.



Scoop

Scoop offers a fee-based ride matching service through an easy-to-use app. Scoop allows commuters to separate their AM and PM trips, to help accommodate unpredictable work schedules. Scoop also lets users schedule a trip as a driver or passenger, depending on their daily needs. Scoop identifies carpoolers who are heading the same direction and finds the most efficient carpool trip based on fastest route, nearby carpoolers, carpool lanes, and other factors. Payment for each trip is made through the app.

Ride matching assistance is also available through a number of peer-to-peer matching programs, such as Zimride, which utilize social networks to match commuters.

Carpool/Vanpool Incentives

Scoop Discounts for San Mateo County Carpools

C/CAG has developed the “Carpool in San Mateo County!” program, which provides a \$2 incentive per person for each trip that begins or ends in San Mateo County. Drivers and riders can earn up to \$4 per day when using the Scoop app to carpool. Drivers and riders using Scoop will automatically receive the \$2 incentive per person during commute periods (5:30 a.m. – 10:00 a.m. and 3:30 p.m. – 8:00 p.m.), with a maximum of \$4 per rider and driver each day.

The Star Store

The Peninsula Traffic Congestion Relief Alliance has established a program called the Star Store. Residents and commuters who travel to, from, or through San Mateo County can earn points by logging their commutes in the STAR platform. Every day that someone commutes by an alternative to driving alone, they earn a point. Users collect points and then redeem them for rewards.

First Five Rides Free on 511

Currently, the 511 Carpool Program is offering new riders on carpool apps Scoop or Waze Carpool five free rides. Users can download the apps, set up an account, enter their schedule and get their first five rides free.

Vanpool Formation Incentive

The 511 Regional Rideshare Program provides up to \$500 in gas cards to new vanpools that meet certain eligibility requirements and complete three to six consecutive months of operation.



Vanpool Seat Subsidy

The 511 Regional Rideshare Program also offers a vanpool seat subsidy in the form of gas cards. The seat subsidy will provide \$100 per month, with a limit of three months per van during the program year, to help cover the fare of a lost participant. The gas cards will be offered to eligible vans on a first-come, first-served basis until the funds are exhausted.

Vanpool Participant Rebates

The Peninsula Traffic Congestion Relief Alliance also offers an incentive to commuters to try vanpooling. The Alliance will pay half of the cost of a new vanpool participant's seat, up to \$100 per month, for the first three months in the van. New vanpools that operate for at least six months can receive a one-time rebate of \$500, paid to the vanpool driver (rotating drivers may share the bonus).

Transit Subsidies

Transit subsidies are an extremely effective means of encouraging residents to use transit rather than driving. There are a number of ways that transit subsidies can be implemented. The transportation coordinator will provide two free annual SamTrans Way2Go Pass and/or Caltrain Go Pass per apartment unit. SamTrans Way2Go Pass will give tenants unlimited rides on all SamTrans regular service seven days a week. Way2Go Pass is deeply discounted below the standard fares, making it an attractive low-cost benefit to residential communities. Transit subsidies are not practical for ownership units (Townhomes) on an on-going basis. However, a free one-year transit pass will be given to each new owner upon original purchase from the developer.

Unbundling of Onsite Residential Parking

To further encourage non-auto transportation methods and to reduce costs for residents, onsite residential parking for the apartment building will be unbundled from each living unit. This will allow residents without cars to rent a unit without having to pay for a parking spot. Parking spaces will be added to leases only for residents who desire parking. Unbundling of parking encourages residents to forego a second car or to have no car at all.

Effectiveness of the TDM Measures

The effectiveness of the TDM plan was evaluated based on the California Air Pollution Control Officers Association (CAPCOA) report “Quantifying Greenhouse Gas Mitigation Measures”, which estimates VMT reduction relative to a project’s design features and applicable TDM measures.

The Bay Area Air Quality Management District (BAAQMD) has released a TDM Tool that assists with calculating VMT reductions due to TDM measures based on the CAPCOA research. The BAAQMD tool quantifies by how much a TDM plan for a specific project in a specific location is likely to reduce VMT. The TDM Tool provides an estimate of the amount by which a project’s location and land use characteristics, its site enhancements, and the measures taken to reduce commute trips will reduce VMT. Based on the TDM Tool, with the implementation of the proposed TDM measures, the project would achieve a reduction of more than 20 percent of the VMT generated by the proposed residential development (see Table 3). For this report, a reduction in trips is considered equivalent to a reduction in VMT.

Table 3
TDM Measures and Estimated VMT Reduction

TDM Measure (CAPCOA ID)	Applied VMT Reduction Rate for Residential Use
Bike Parking (SDT-7)	0.63%
Pedestrian Network Improvement (SDT-1)	1%
Unbundled Parking (PDT-2) ¹	6%
Commute Trip Reduction Marketing (TRT-7)	2%
Increase Density (LUT-1)	5%
Transit Subsidies (TRT-4)	6%
Total	20.63%
Notes:	
1. Unbundled Parking will be applied to the proposed apartment residential units only.	
Source: <i>California Air Pollution Control Officers Association (CAPCOA) report</i> , August 2010	

C/CAG TDM Requirement

The City/County Association of Governments (C/CAG) for San Mateo County has established trip reduction requirements for new development within the county. C/CAG categorizes new developments as small projects and large projects. Multi-family residential projects larger than 50 units (generating more than 500 average daily trips) are considered to be large projects. The recommended vehicle trip reduction target for large multi-family residential projects that are not transit oriented developments (TOD) is 35 percent. The project would not be qualified as a transit proximate development, which is described as a project between 0.5 and 3 miles of high-quality transit. A high-quality transit area provides fixed route bus services with headways of 15 minutes or less during peak hours.

To accomplish the reduction goal, C/CAG provides a list of potential TDM measures, some of which are required and some of which are optional. Each measure has an associated point value and

reduction percentage. Based on the updated C/CAG TDM policy, the project must first fulfill all required measures prior to selecting a sufficient number of additional recommended measures to achieve the minimum 35 percent trip reduction.

As shown in Table 4, the project will achieve the reduction goal of 35 percent with the TDM measures included in this plan. C/CAG requires the following for large multi-family residential projects:

- Complete a TDM self-certification status form biennially for the first six (6) years after occupancy.

Table 4
Summary of C/CAG Estimated Trip Reduction Percentage

Category	Measure	Provided by Project (Y/N)	Point Value	Estimated Trip Reduction Percentage
Required TDM Measures (Non-Transit Proximate)				
Parking Management for Ridesharing	Orientation, Education, Promotional Programs and/or Materials	Y	1	1.0%
TDM Management and Admin	TDM Coordinator/Contact Person	Y	1	0.5%
	Actively Participate in Commute.org, or Transportation Management Association (TMA) Equivalent	Y	6	5.0%
	Certified participation in Commute.org, or equivalent program such as TMA	Y	2	4.0%
	Commute assistance and ride-matching	Y	4	1.0%
Shuttles, Transit, and Ridesharing	Transit or Ridesharing Passes/Subsidies ¹	Y	6	7.3%
Active Transportation	Secure Bicycle Storage	Y	1	1.0%
Site Design Initiatives	Design Streets to Encourage Bike/Ped Access	Y	1	1.0%
Required TDM Measures Total (Non-Transit Proximate)			22	20.8%
Additional TDM Measures (Non-Transit Proximate)				
Parking Mgmt.	Paid Parking at Market Rate ²	Y	7	18.3%
Additional TDM Measures Total (Non-Transit Proximate)			7	18.3%
Required & Additional TDM Measures Total			29	39.1%
Notes:				
1. Transit subsidies are not practical for ownership units (condo) on an on-going basis. However, a free one-year transit pass will be given to each new owner upon original purchase from the developer.				
2. Paid Parking at Market Rate Measure will be applied to the proposed apartment residential units only.				

4.

TDM Implementation, Monitoring, and Reporting

This chapter outlines the required implementation, monitoring, and reporting for the 123 Independence Drive Residential Development TDM Plan.

Annual Commute Surveys

The purpose of the TDM Plan is to reduce daily vehicle trips by at least 20 percent, thereby lessening parking issues, traffic congestion, and vehicle emissions associated with the proposed project. Regular monitoring will ensure that the implemented TDM measures are effective and achieve that standard. The program will be evaluated annually to assess the actual level of trip reduction achieved at the site and to identify any adjustments to the program necessary to ensure the TDM measures are successful.

Annual commute surveys will be administered by the transportation coordinator to measure the number of residents commuting by alternative modes and whether they are aware of the services and programs that are available to them. Residents who do not respond to the survey will be assumed to be driving alone. In addition to obtaining quantitative data on the mode split, the survey will provide qualitative data regarding resident perceptions of the alternative transportation programs. The survey results will measure the relative effectiveness of individual program components relative to other components and facilitate the design of possible program enhancements. Along with collecting information on mode split, the survey can gather information on use of the bike storage, use of the online kiosk, and walking trips made to nearby commercial uses. The transportation coordinator will be responsible for administering the survey, compiling the results, and communicating the results to the City.

Annual Driveway Counts

In order to evaluate whether or not the project has met the 20 percent daily vehicle trip reduction requirement, annual driveway counts will be conducted. A count of the number of vehicles entering and exiting the project's driveways on a typical weekday will be conducted annually by an independent third party to determine the number of vehicle trips being generated by the project. The

counts will be conducted at the site's driveway on a weekday that is not disclosed in advance. All vehicles entering and exiting the project driveways will be counted.

The driveway counts will be used to determine the actual daily trip generation of the project. The Transportation Coordinator will provide the results of the driveway counts to the City of Menlo Park, along with a statement as to whether the 20 percent PM peak-hour trip reduction goal was met.

Annual Reporting to City

The TDM ordinance for the residential mixed-use district states that the required trip reduction will be achieved "over the life of the development, as evidenced by annual reporting provided to the satisfaction of the City's Transportation Manager." The Transportation Coordinator will submit to the City of Menlo Park annual documentation to substantiate implementation of the TDM plan elements, the results of the resident survey, and the results of the driveway counts. If the 20 percent peak-hour trip reduction requirement has not been met, then the report will state what additional measures will be implemented in the coming year in order to achieve the City's requirement.

Appendix B

Intersection LOS Worksheets

123 Independence Drive Project

Vistro File: P:\...\123

Scenario 17 Existing AM (2022 vols)

Independence_DUDEK_Base4_Ex_AM.vistro

Report File: P:\...\EX AM_101122.pdf

10/11/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.817	59.4	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.749	16.0	B
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.863	18.8	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NB Left	0.717	19.4	B
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.663	20.2	C
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.876	37.8	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.734	36.2	D
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.635	8.5	A
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	0.877	58.5	E
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	WB Left	0.102	21.0	C
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.012	50.6	F
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.822	13.7	B
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.633	45.3	D
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	0.995	115.4	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Left	0.743	11.9	B
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	WB Thru	0.002	0.0	A
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	WB Thru	0.002	0.0	A

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	EB Thru	0.005	0.0	A
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	59.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	167	28	1548	10	31	7	8	202	305	1990	382	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	28	1548	10	31	7	8	202	305	1990	382	35
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	7	403	3	8	2	2	53	79	518	99	9
Total Analysis Volume [veh/h]	174	29	1613	10	32	7	8	210	318	2073	398	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing in	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.39	0.01	0.01	0.07	0.07	0.22	0.41	0.24
s, saturation flow rate [veh/h]	1822	4123	1864	1612	1621	1480	1438	5075	1788
c, Capacity [veh/h]	115	2272	339	293	318	290	282	2533	893
d1, Uniform Delay [s]	74.97	26.41	54.29	54.33	55.61	55.61	63.69	33.93	26.50
k, delay calibration	0.50	0.50	0.04	0.04	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	379.76	1.91	0.03	0.04	0.68	0.75	92.38	3.08	1.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.77	0.71	0.08	0.08	0.36	0.36	1.13	0.82	0.49
d, Delay for Lane Group [s/veh]	454.73	28.32	54.33	54.37	56.29	56.36	156.07	37.01	28.40
Lane Group LOS	F	C	D	D	E	E	F	D	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	16.84	15.45	0.88	0.80	4.09	3.73	18.65	23.34	11.56
50th-Percentile Queue Length [ft/ln]	420.96	386.13	21.89	19.88	102.17	93.36	466.22	583.48	289.12
95th-Percentile Queue Length [veh/ln]	27.15	21.89	1.58	1.43	7.36	6.72	27.39	31.26	17.14
95th-Percentile Queue Length [ft/ln]	678.73	547.26	39.40	35.78	183.91	168.05	684.67	781.56	428.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	454.73	454.73	28.32	54.33	54.35	54.37	56.29	56.32	156.07	37.01	28.40	28.40
Movement LOS	F	F	C	D	D	D	E	E	F	D	C	C
d_A, Approach Delay [s/veh]	75.98			54.35			115.50			35.52		
Approach LOS	E			D			F			D		
d_I, Intersection Delay [s/veh]	59.42											
Intersection LOS	E											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.008			2.431			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.76			54.89			52.34			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.556			1.600			2.002			5.696		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1458	0	0	884	794	677
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1458	0	0	884	794	677
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	376	0	0	228	205	174
Total Analysis Volume [veh/h]	1503	0	0	911	819	698
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	52	52	23	23
g / C, Green / Cycle	0.65	0.65	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.43	0.26	0.24	0.25
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2278	2265	1006	802
d1, Uniform Delay [s]	8.44	6.51	26.30	26.87
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	0.53	0.62	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.66	0.40	0.81	0.87
d, Delay for Lane Group [s/veh]	9.95	7.05	26.93	28.05
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.86	3.15	6.98	6.13
50th-Percentile Queue Length [ft/ln]	171.38	78.77	174.45	153.27
95th-Percentile Queue Length [veh/ln]	11.15	5.67	11.31	10.19
95th-Percentile Queue Length [ft/ln]	278.73	141.79	282.76	254.79

Movement, Approach, & Intersection Results

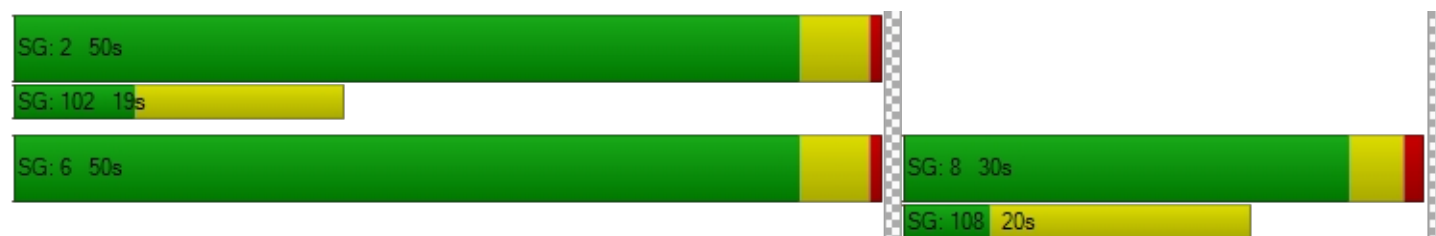
d_M, Delay for Movement [s/veh]	9.95	0.00	0.00	7.05	26.93	28.05
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	9.95		7.05		27.44	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	16.03					
Intersection LOS	B					
Intersection V/C	0.749					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.885	2.494
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.45	18.31
I_b,int, Bicycle LOS Score for Intersection	2.800	2.311	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	918	1506	217	1157	449
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	918	1506	217	1157	449
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	234	384	54	295	115
Total Analysis Volume [veh/h]	0	937	1537	217	1181	458
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	45	43	31	31
g / C, Green / Cycle	0.56	0.53	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.23	0.44	0.35	0.16
s, saturation flow rate [veh/h]	4000	3515	3373	2782
c, Capacity [veh/h]	2244	1879	1291	1064
d1, Uniform Delay [s]	10.05	15.37	23.43	18.22
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.57	4.10	1.17	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.82	0.92	0.43
d, Delay for Lane Group [s/veh]	10.63	19.46	24.59	18.32
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.25	10.94	10.04	2.98
50th-Percentile Queue Length [ft/ln]	106.13	273.56	250.93	74.50
95th-Percentile Queue Length [veh/ln]	7.62	16.37	15.23	5.36
95th-Percentile Queue Length [ft/ln]	190.60	409.19	380.83	134.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	10.63	19.46	0.00	24.59	18.32
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	10.63		19.46		22.84	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.80					
Intersection LOS	B					
Intersection V/C	0.863					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	2.960	0.000	2.609
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.333	2.828	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	25	1082	7	462	1225	280	232	20	0	13	4	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	1.70	0.00	0.00	0.00	0.00	12.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	25	1082	7	462	1225	280	232	20	0	13	4	1
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	301	2	128	340	78	64	6	0	4	1	0
Total Analysis Volume [veh/h]	28	1202	8	513	1361	311	258	22	0	14	4	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing in	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	5	106	106	120	113	113	27	27	6	6
g / C, Green / Cycle	0.03	0.66	0.66	0.75	0.71	0.71	0.17	0.17	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.45	0.45	0.48	0.14	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1758	3532	1848	1145	1840	1727	1785	1900	1829	2552
c, Capacity [veh/h]	57	2339	1224	857	1302	1222	303	322	73	102
d1, Uniform Delay [s]	75.98	11.77	11.77	8.74	12.52	13.25	64.40	55.74	74.38	73.67
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.25	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.40	0.76	3.08	2.44	3.12	14.17	0.07	1.28	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.34	0.34	0.60	0.64	0.68	0.85	0.07	0.25	0.01
d, Delay for Lane Group [s/veh]	80.65	12.16	12.52	11.82	14.97	16.37	78.57	55.80	75.66	73.70
Lane Group LOS	F	B	B	B	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.21	6.22	6.64	3.00	16.02	17.07	11.51	0.77	0.75	0.02
50th-Percentile Queue Length [ft/ln]	30.22	155.60	165.98	74.91	400.54	426.84	287.74	19.18	18.83	0.51
95th-Percentile Queue Length [veh/ln]	2.18	10.32	10.86	5.39	22.59	23.85	17.07	1.38	1.36	0.04
95th-Percentile Queue Length [ft/ln]	54.39	257.88	271.62	134.84	564.65	596.26	426.83	34.53	33.89	0.92

Movement, Approach, & Intersection Results

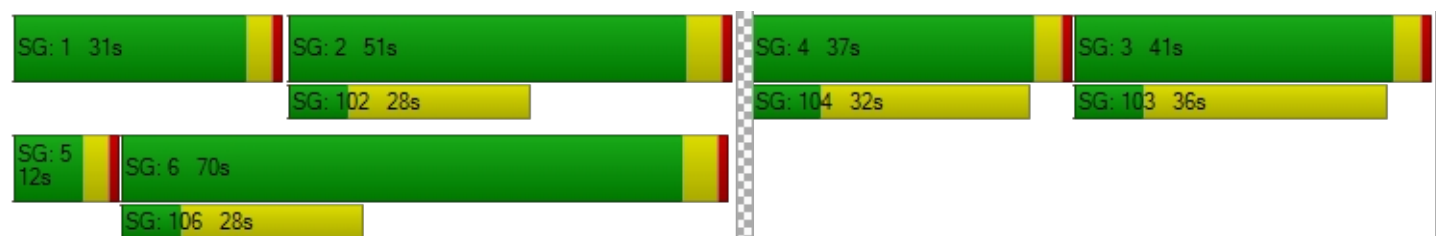
d_M, Delay for Movement [s/veh]	80.65	12.29	12.52	11.82	15.51	16.37	78.57	55.80	55.80	75.66	75.66	73.70
Movement LOS	F	B	B	B	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.83			14.76			76.78			75.56		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	19.43											
Intersection LOS	B											
Intersection V/C	0.717											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.045			3.223			2.136			3.004		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.59			28.16			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.241			3.362			2.022			1.688		
Bicycle LOS	B			C			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	835	84	275	778	48	143	65	2	40	20	208
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	835	84	275	778	48	143	65	2	40	20	208
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	213	21	70	198	12	36	17	1	10	5	53
Total Analysis Volume [veh/h]	0	852	86	281	794	49	146	66	2	41	20	212
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing in	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			12			9			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	32	32	16	51	51	24	24
g / C, Green / Cycle	0.40	0.40	0.20	0.64	0.64	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.16	0.24	0.24	0.20	0.17
s, saturation flow rate [veh/h]	1882	1654	1708	1807	1763	1070	1608
c, Capacity [veh/h]	804	667	342	1158	1130	398	537
d1, Uniform Delay [s]	19.42	19.43	30.66	6.75	6.76	25.26	23.63
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.25	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.59	5.03	4.90	0.90	0.93	2.58	1.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.66	0.82	0.37	0.37	0.54	0.51
d, Delay for Lane Group [s/veh]	23.02	24.46	35.56	7.65	7.69	27.83	25.22
Lane Group LOS	C	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.69	6.99	5.40	3.00	2.95	3.89	4.42
50th-Percentile Queue Length [ft/ln]	192.32	174.86	135.07	74.91	73.71	97.22	110.39
95th-Percentile Queue Length [veh/ln]	12.24	11.33	9.21	5.39	5.31	7.00	7.86
95th-Percentile Queue Length [ft/ln]	306.03	283.29	230.37	134.83	132.67	175.00	196.54

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.02	23.62	24.46	35.56	7.67	7.69	27.83	27.83	27.83	25.22	25.22	25.22
Movement LOS	C	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	23.69			14.65			27.83			25.22		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.21											
Intersection LOS	C											
Intersection V/C	0.663											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.79			29.79			29.79			19.70		
I_p,int, Pedestrian LOS Score for Intersection	2.688			3.032			1.823			2.036		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.70			8.68			17.47			17.41		
I_b,int, Bicycle LOS Score for Intersection	2.333			2.487			1.913			2.010		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	507	287	434	314	230	483
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	3.00	2.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	507	45	434	314	230	56
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	133	12	114	83	61	15
Total Analysis Volume [veh/h]	534	47	457	331	242	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	3		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		23		22	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	27	54	22	17	17	17
g / C, Green / Cycle	0.34	0.68	0.28	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.31	0.03	0.26	0.18	0.13	0.04
s, saturation flow rate [veh/h]	1724	1559	1781	1870	1885	1523
c, Capacity [veh/h]	587	1065	495	399	402	325
d1, Uniform Delay [s]	25.10	4.11	27.94	29.95	28.28	25.60
k, delay calibration	0.08	0.04	0.33	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.47	0.01	18.85	17.81	6.52	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.04	0.92	0.83	0.60	0.18
d, Delay for Lane Group [s/veh]	29.56	4.11	46.79	47.75	34.80	26.82
Lane Group LOS	C	A	D	D	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.77	0.20	10.63	7.80	4.75	1.00
50th-Percentile Queue Length [ft/ln]	244.31	5.03	265.69	194.94	118.72	24.94
95th-Percentile Queue Length [veh/ln]	14.90	0.36	15.97	12.38	8.32	1.80
95th-Percentile Queue Length [ft/ln]	372.48	9.06	399.35	309.43	208.07	44.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.56	4.11	46.79	47.75	34.80	26.82
Movement LOS	C	A	D	D	C	C
d_A, Approach Delay [s/veh]	27.50		47.20		33.23	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	37.83					
Intersection LOS	D					
Intersection V/C	0.876					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.66	0.00	45.13
I_p,int, Pedestrian LOS Score for Intersection	2.898	0.000	3.075
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	126	503	503
d_b, Bicycle Delay [s]	34.93	22.53	22.52
I_b,int, Bicycle LOS Score for Intersection	1.560	2.860	2.761
Bicycle LOS	A	C	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	117	828	82	30	1038	426	511	48	141	36	15	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	117	828	82	30	1038	426	511	48	126	36	15	26
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	213	21	8	268	110	132	12	32	9	4	7
Total Analysis Volume [veh/h]	121	854	85	31	1070	439	527	49	130	37	15	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	103	103	6	96	96	32	32	32	12	12
g / C, Green / Cycle	0.08	0.64	0.64	0.04	0.60	0.60	0.20	0.20	0.20	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.26	0.02	0.43	0.44	0.17	0.17	0.09	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1809	1704	1823	1647	1717	1702	1524	1439	1191
c, Capacity [veh/h]	142	1209	1166	60	1092	986	340	337	302	104	86
d1, Uniform Delay [s]	72.48	13.53	13.55	75.80	22.51	23.10	61.83	61.81	56.08	70.64	71.34
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	43.63	0.97	1.01	2.58	4.01	4.96	4.55	4.55	0.72	1.53	3.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.39	0.40	0.52	0.71	0.74	0.85	0.85	0.43	0.36	0.49
d, Delay for Lane Group [s/veh]	116.11	14.49	14.56	78.38	26.51	28.06	66.38	66.35	56.80	72.17	74.51
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.63	8.44	8.20	1.30	21.31	20.63	11.90	11.78	4.73	1.51	1.75
50th-Percentile Queue Length [ft/ln]	165.63	211.03	205.09	32.45	532.72	515.75	297.59	294.47	118.36	37.72	43.86
95th-Percentile Queue Length [veh/ln]	10.85	13.21	12.90	2.34	28.88	28.08	17.56	17.41	8.30	2.72	3.16
95th-Percentile Queue Length [ft/ln]	271.17	330.16	322.52	58.41	721.98	701.97	439.05	435.19	207.57	67.89	78.95

Movement, Approach, & Intersection Results

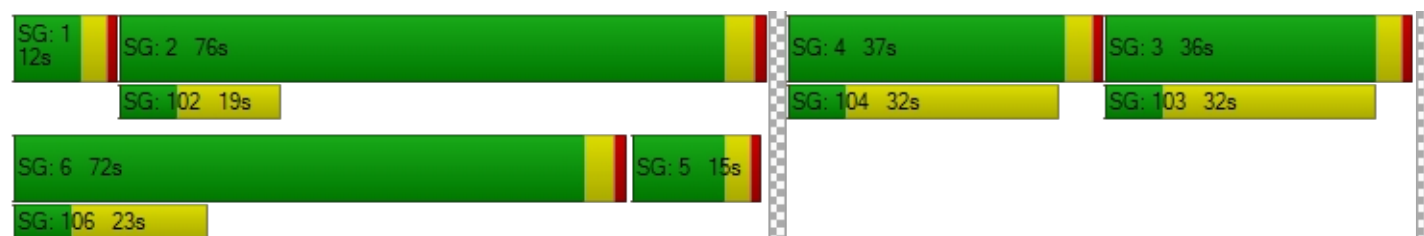
d_M, Delay for Movement [s/veh]	116.11	14.52	14.56	78.38	26.93	28.06	66.37	66.35	56.80	72.17	74.51	74.51
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	26.12			28.29			64.61			73.42		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	36.24											
Intersection LOS	D											
Intersection V/C	0.734											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.918			3.039			2.443			2.034		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.434			2.830			2.749			1.690		
Bicycle LOS	B			C			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	8.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↷		↑↑↑↷		↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	118	48	1556	121	104	2112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	48	1556	121	104	2112
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	12	401	31	27	544
Total Analysis Volume [veh/h]	122	49	1604	125	107	2177
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	35	35	35	35	35	35
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	4	4	13	13	3	20
g / C, Green / Cycle	0.12	0.12	0.36	0.36	0.09	0.57
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.32	0.08	0.06	0.43
s, saturation flow rate [veh/h]	3173	1509	4959	1492	1810	5024
c, Capacity [veh/h]	370	176	1810	545	169	2891
d1, Uniform Delay [s]	14.23	14.14	10.45	7.70	15.32	5.58
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.32	0.61	0.08	1.45	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.28	0.89	0.23	0.63	0.75
d, Delay for Lane Group [s/veh]	14.42	14.46	11.07	7.78	16.76	5.73
Lane Group LOS	B	B	B	A	B	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.39	0.32	2.17	0.37	0.66	0.77
50th-Percentile Queue Length [ft/ln]	9.64	7.88	54.16	9.19	16.60	19.15
95th-Percentile Queue Length [veh/ln]	0.69	0.57	3.90	0.66	1.20	1.38
95th-Percentile Queue Length [ft/ln]	17.35	14.19	97.48	16.54	29.88	34.48

Movement, Approach, & Intersection Results

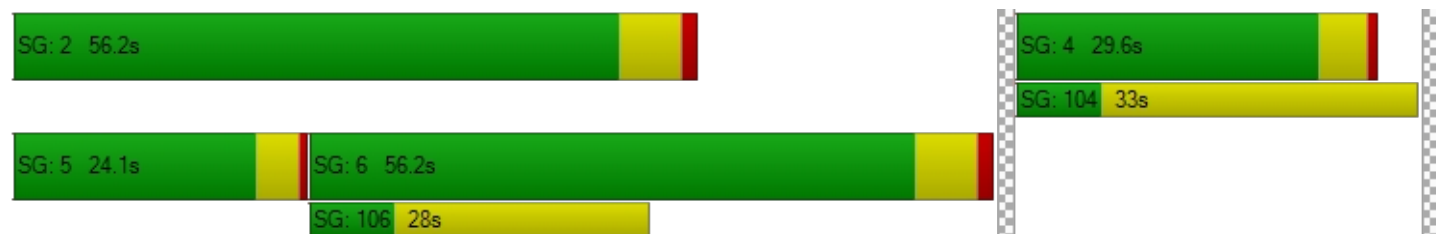
d_M, Delay for Movement [s/veh]	14.42	14.46	11.07	7.78	16.76	5.73
Movement LOS	B	B	B	A	B	A
d_A, Approach Delay [s/veh]	14.43		10.83		6.25	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	8.48					
Intersection LOS	A					
Intersection V/C	0.635					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	8.21	8.21	8.21
I_p,int, Pedestrian LOS Score for Intersection	2.155	3.404	3.358
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1430	2860	2860
d_b, Bicycle Delay [s]	1.42	3.24	3.23
I_b,int, Bicycle LOS Score for Intersection	1.560	2.511	2.816
Bicycle LOS	A	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	58.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	2	158	20	81	379	20	15	241	217	37	21	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	17.90	100.00	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	158	20	81	379	20	15	241	217	37	21	103
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	44	6	23	105	6	4	67	60	10	6	29
Total Analysis Volume [veh/h]	2	176	22	90	421	22	17	268	241	41	23	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing in	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	17
g / C, Green / Cycle	0.34	0.34	0.34	0.34	0.34	0.19
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.38	0.01	0.33	0.17
s, saturation flow rate [veh/h]	1466	1278	1398	1357	1566	1040
c, Capacity [veh/h]	535	431	519	456	526	200
d1, Uniform Delay [s]	21.06	21.11	31.03	19.87	29.06	35.02
k, delay calibration	0.11	0.11	0.50	0.11	0.42	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.25	46.73	0.03	29.06	12.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.22	1.03	0.04	0.97	0.89
d, Delay for Lane Group [s/veh]	21.24	21.36	77.76	19.90	58.13	47.65
Lane Group LOS	C	C	F	B	E	D
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	1.56	1.41	17.87	0.24	14.44	4.37
50th-Percentile Queue Length [ft/ln]	39.03	35.19	446.79	5.92	360.92	109.32
95th-Percentile Queue Length [veh/ln]	2.81	2.53	25.26	0.43	20.67	7.80
95th-Percentile Queue Length [ft/ln]	70.25	63.34	631.41	10.66	516.70	195.05

Movement, Approach, & Intersection Results

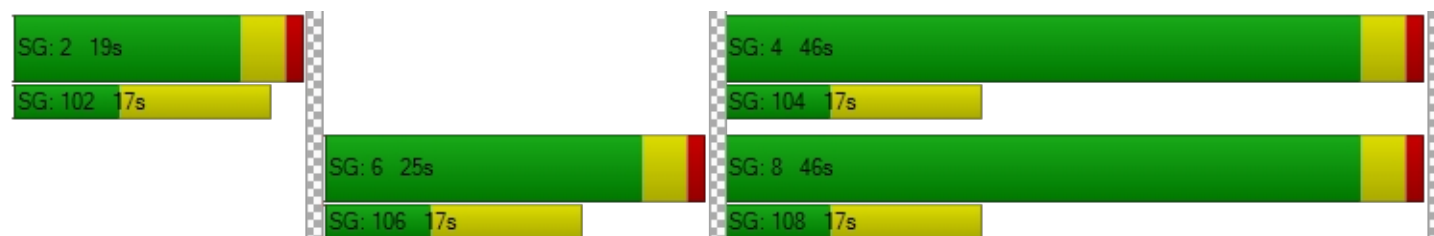
d_M, Delay for Movement [s/veh]	21.24	21.29	21.36	77.76	77.76	77.76	19.90	58.13	58.13	47.65	47.65	47.65
Movement LOS	C	C	C	E	E	E	B	E	E	D	D	D
d_A, Approach Delay [s/veh]	21.29			77.76			56.89			47.65		
Approach LOS	C			E			E			D		
d_I, Intersection Delay [s/veh]	58.53											
Intersection LOS	E											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.17			34.17			34.17			34.17		
I_p,int, Pedestrian LOS Score for Intersection	2.233			2.212			2.128			2.114		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	944			944			472			337		
d_b, Bicycle Delay [s]	12.40			12.40			25.96			30.75		
I_b,int, Bicycle LOS Score for Intersection	1.725			2.439			2.428			1.853		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Two-way stop	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.102

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	82	29	198	276	0	0	0	0	23	0	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	82	29	198	276	0	0	0	0	23	0	43
Peak Hour Factor	1.0000	0.9100	0.9100	0.9100	0.9100	1.0000	1.0000	1.0000	1.0000	0.9100	1.0000	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	23	8	54	76	0	0	0	0	6	0	12
Total Analysis Volume [veh/h]	0	90	32	218	303	0	0	0	0	25	0	47
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.05
d_M, Delay for Movement [s/veh]	7.86	0.00	0.00	7.90	0.00	0.00	21.16	19.96	9.89	21.05	21.04	10.36
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.52	0.52	0.52	0.00	0.00	0.00	0.54	0.54	0.54
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	13.11	13.11	13.11	0.00	0.00	0.00	13.47	13.47	13.47
d_A, Approach Delay [s/veh]	0.00			3.30			17.00			14.07		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	3.82											
Intersection LOS	C											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	50.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	53	30	0	32	138	173	128	2	25	1	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.00	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	30	0	32	138	173	128	2	25	1	0	2
Peak Hour Factor	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	10	0	11	48	60	44	1	9	0	0	1
Total Analysis Volume [veh/h]	74	42	0	44	192	240	178	3	35	1	0	3
Pedestrian Volume [ped/h]	70			0			137			17		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.04	0.00	0.00	0.67	0.01	0.08	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.46	0.00	0.00	8.48	0.00	0.00	50.02	50.58	44.41	18.94	21.66	8.66
Movement LOS	A	A	A	A	A	A	F	F	E	C	C	A
95th-Percentile Queue Length [veh/ln]	0.27	0.27	0.27	0.13	0.13	0.13	5.72	5.72	5.72	0.02	0.02	0.02
95th-Percentile Queue Length [ft/ln]	6.86	6.86	6.86	3.19	3.19	3.19	143.02	143.02	143.02	0.52	0.52	0.52
d_A, Approach Delay [s/veh]	6.03			0.78			49.12			11.23		
Approach LOS	A			A			E			B		
d_I, Intersection Delay [s/veh]	14.44											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	105	228	1210	507	296	2022
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	228	1210	507	296	2022
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	60	318	133	78	532
Total Analysis Volume [veh/h]	111	240	1274	534	312	2128
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	14	14	24	24	36	36
g / C, Green / Cycle	0.23	0.23	0.41	0.41	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.20	0.28	0.38	0.53	0.47
s, saturation flow rate [veh/h]	3078	1188	4470	1393	591	4518
c, Capacity [veh/h]	706	272	1813	565	476	2739
d1, Uniform Delay [s]	18.55	22.40	14.88	17.25	10.74	8.82
k, delay calibration	0.04	0.10	0.04	0.04	0.12	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	8.11	0.19	3.83	1.70	0.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.88	0.70	0.95	0.66	0.78
d, Delay for Lane Group [s/veh]	18.59	30.52	15.06	21.08	12.44	9.00
Lane Group LOS	B	C	B	C	B	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.58	3.61	3.67	5.91	1.40	4.07
50th-Percentile Queue Length [ft/ln]	14.45	90.35	91.77	147.71	34.97	101.87
95th-Percentile Queue Length [veh/ln]	1.04	6.50	6.61	9.89	2.52	7.33
95th-Percentile Queue Length [ft/ln]	26.01	162.62	165.19	247.36	62.94	183.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	18.59	30.52	15.06	21.08	12.44	9.00
Movement LOS	B	C	B	C	B	A
d_A, Approach Delay [s/veh]	26.74		16.84		9.44	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.67					
Intersection LOS	B					
Intersection V/C	0.822					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.03	20.03	20.03
I_p,int, Pedestrian LOS Score for Intersection	2.819	3.525	3.398
Crosswalk LOS	C	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	666	1665	1665
d_b, Bicycle Delay [s]	13.35	0.84	0.84
I_b,int, Bicycle LOS Score for Intersection	1.560	2.554	2.902
Bicycle LOS	A	B	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	74	213	47	180	199	436	71	21	75	35	29	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	213	47	180	199	436	71	21	75	35	29	44
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	54	12	46	51	111	18	5	19	9	7	11
Total Analysis Volume [veh/h]	76	217	48	184	203	445	72	21	77	36	30	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing in	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing mi	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	50	57	0	11	18	0	0	18	18	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	9	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	7	48	9	50	19	52	19	19
g / C, Green / Cycle	0.06	0.43	0.08	0.45	0.17	0.48	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.06	0.44	0.08	0.07	0.07	0.03
s, saturation flow rate [veh/h]	1572	1489	3105	1484	1126	1095	1001	1372
c, Capacity [veh/h]	98	646	249	670	192	521	221	234
d1, Uniform Delay [s]	50.79	21.44	49.48	29.37	41.27	16.23	40.31	39.15
k, delay calibration	0.11	0.20	0.11	0.40	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.07	0.76	4.30	24.02	8.53	0.60	3.43	1.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.41	0.74	0.97	0.49	0.15	0.30	0.19
d, Delay for Lane Group [s/veh]	62.86	22.20	53.78	53.40	49.80	16.83	43.74	40.98
Lane Group LOS	E	C	D	D	D	B	D	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.39	4.78	2.62	20.42	2.73	1.17	1.79	1.16
50th-Percentile Queue Length [ft/ln]	59.67	119.50	65.38	510.60	68.31	29.33	44.83	29.11
95th-Percentile Queue Length [veh/ln]	4.30	8.37	4.71	27.84	4.92	2.11	3.23	2.10
95th-Percentile Queue Length [ft/ln]	107.40	209.14	117.69	695.90	122.95	52.80	80.69	52.39

Movement, Approach, & Intersection Results

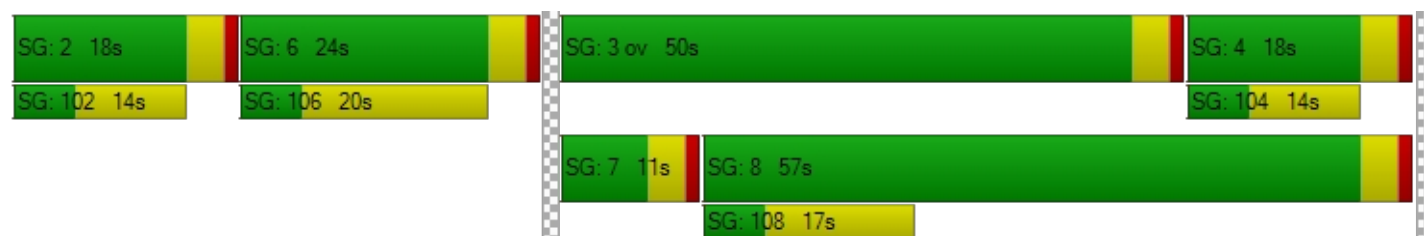
d_M, Delay for Movement [s/veh]	62.86	22.20	22.20	53.78	53.40	53.40	49.80	49.80	16.83	43.74	43.74	40.98
Movement LOS	E	C	C	D	D	D	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	31.26			53.48			34.87			42.62		
Approach LOS	C			D			C			D		
d_I, Intersection Delay [s/veh]	45.26											
Intersection LOS	D											
Intersection V/C	0.633											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	46.37			46.37			46.37			46.37		
I_p,int, Pedestrian LOS Score for Intersection	2.216			2.538			2.186			2.231		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	964			255			255			364		
d_b, Bicycle Delay [s]	14.77			41.89			41.89			36.82		
I_b,int, Bicycle LOS Score for Intersection	2.122			2.932			1.840			1.743		
Bicycle LOS	B			C			A			A		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	115.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.995

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	201	438	285	36	69	74	351	422	177	1052	2284	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	201	438	285	36	69	58	351	422	71	1052	2284	74
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	112	73	9	18	15	90	108	18	268	583	19
Total Analysis Volume [veh/h]	205	447	291	37	70	59	358	431	72	1073	2331	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing in	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	15	15	44	9	9	9	14	39	39	25	50	50
g / C, Green / Cycle	0.14	0.14	0.41	0.08	0.09	0.09	0.13	0.36	0.36	0.23	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.12	0.29	0.16	0.03	0.06	0.05	0.11	0.09	0.05	0.32	0.46	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1079	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	236	218	724	106	106	94	442	1779	527	768	2318	746
d1, Uniform Delay [s]	45.41	46.62	22.54	46.89	47.91	47.74	45.77	24.20	23.23	41.66	29.16	16.47
k, delay calibration	0.16	0.41	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.21	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.23	487.34	0.36	1.96	6.72	6.82	3.58	0.07	0.12	181.99	10.12	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	2.05	0.40	0.35	0.66	0.63	0.81	0.24	0.14	1.40	1.01	0.10
d, Delay for Lane Group [s/veh]	58.65	533.96	22.90	48.85	54.63	54.56	49.35	24.27	23.35	223.64	39.28	16.53
Lane Group LOS	E	F	C	D	D	D	D	C	C	F	F	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.12	17.58	1.69	1.02	1.03	1.74	4.88	2.58	1.25	29.52	21.23	1.07
50th-Percentile Queue Length [ft/ln]	152.97	439.45	42.36	25.38	25.69	43.41	121.91	64.53	31.33	737.94	530.79	26.79
95th-Percentile Queue Length [veh/ln]	10.18	29.89	3.05	1.83	1.85	3.13	8.50	4.65	2.26	45.16	28.92	1.93
95th-Percentile Queue Length [ft/ln]	254.39	747.33	76.24	45.68	46.24	78.14	212.45	116.15	56.39	1129.10	722.93	48.22

Movement, Approach, & Intersection Results

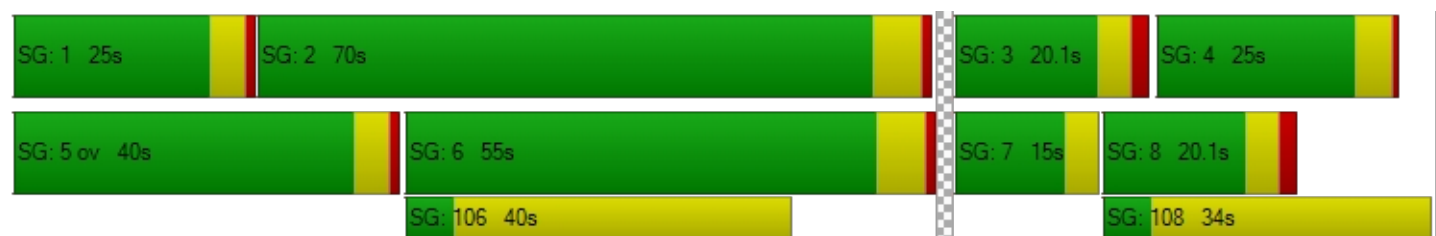
d_M, Delay for Movement [s/veh]	58.65	533.96	22.90	48.85	54.63	54.56	49.35	24.27	23.35	223.64	39.28	16.53
Movement LOS	E	F	C	D	D	D	D	C	C	F	F	B
d_A, Approach Delay [s/veh]	272.92			53.32			34.62			95.63		
Approach LOS	F			D			C			F		
d_I, Intersection Delay [s/veh]	115.38											
Intersection LOS	F											
Intersection V/C	0.995											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.48	0.00	45.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.107	0.000	3.324	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	381	277	906	1183
d_b, Bicycle Delay [s]	35.46	40.14	16.20	9.03
I_b,int, Bicycle LOS Score for Intersection	2.338	1.710	2.091	3.474
Bicycle LOS	B	A	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	211	429	854	69	1183	2777
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	3.60	5.40	3.50	1.60	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	211	429	854	69	1183	2777
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	111	220	18	305	716
Total Analysis Volume [veh/h]	218	442	880	71	1220	2863
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		6		0	
v_ci, Inbound Pedestrian Volume crossing mi	6		7		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	35	110	75	110
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	66	66	66	66	66	66
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	7	38	19	19	27	49
g / C, Green / Cycle	0.11	0.57	0.29	0.29	0.40	0.74
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.18	0.05	0.35	0.57
s, saturation flow rate [veh/h]	3453	4166	4955	1549	3470	5049
c, Capacity [veh/h]	370	2373	1420	444	1395	3752
d1, Uniform Delay [s]	28.13	6.85	20.46	17.62	18.24	5.04
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.01	0.54	0.20	0.71	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.19	0.62	0.16	0.87	0.76
d, Delay for Lane Group [s/veh]	28.69	6.86	21.00	17.82	18.96	5.44
Lane Group LOS	C	A	C	B	B	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.57	0.79	3.30	0.70	6.68	1.68
50th-Percentile Queue Length [ft/ln]	39.30	19.80	82.61	17.48	167.02	41.88
95th-Percentile Queue Length [veh/ln]	2.83	1.43	5.95	1.26	10.92	3.02
95th-Percentile Queue Length [ft/ln]	70.75	35.63	148.70	31.46	272.99	75.38

Movement, Approach, & Intersection Results

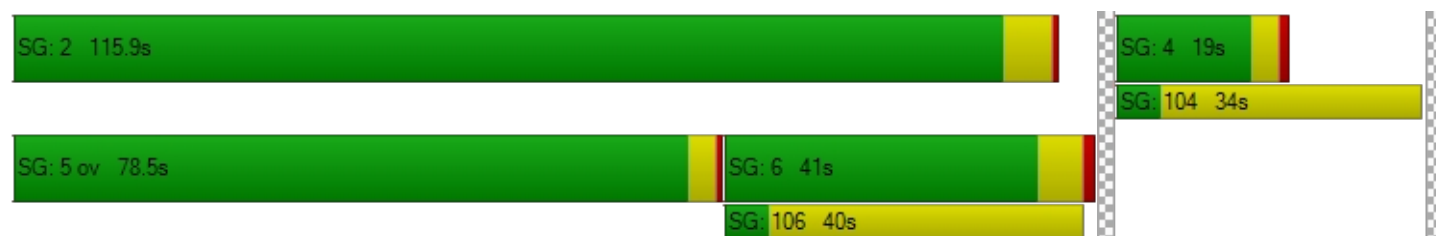
d_M, Delay for Movement [s/veh]	28.69	6.86	21.00	17.82	18.96	5.44
Movement LOS	C	A	C	B	B	A
d_A, Approach Delay [s/veh]	14.07		20.76		9.48	
Approach LOS	B		C		A	
d_I, Intersection Delay [s/veh]	11.90					
Intersection LOS	B					
Intersection V/C	0.743					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.63	24.63	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.897	3.609	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	454	1060	424
d_b, Bicycle Delay [s]	19.72	7.30	20.51
I_b,int, Bicycle LOS Score for Intersection	1.670	2.083	3.805
Bicycle LOS	A	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	155	0	0	226	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	155	0	0	226	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	39	0	0	57	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	155	0	0	226	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.24	11.53	9.04	11.24	11.53	9.43	7.68	0.00	0.00	7.53	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.60			10.73			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	155	226	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	155	226	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	39	57	0
Total Analysis Volume [veh/h]	0	0	0	155	226	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.79	9.43	7.68	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.11		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	474	0	0	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	474	0	0	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	119	0	0	11
Total Analysis Volume [veh/h]	0	0	474	0	0	42
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.93	11.10	0.00	0.00	8.31	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.52		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

123 Independence Drive Project

Vistro File: P:\...\123

Scenario 17 Existing PM (2022 vols)

Independence_DUDEK_Base4_Ex_PM.vistro

Report File: P:\...\EX PM_101122.pdf

10/11/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.730	52.6	D
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.794	13.6	B
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.722	17.1	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NB Left	0.659	31.8	C
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.652	19.0	B
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	WB Thru	0.791	31.9	C
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.700	49.7	D
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.793	13.7	B
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	0.720	22.8	C
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	WB Left	0.047	21.2	C
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.011	18.7	C
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.873	17.8	B
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.679	46.1	D
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Right	1.069	111.1	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Right	1.079	106.7	F
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	EB Thru	0.003	0.0	A
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	EB Thru	0.003	0.0	A

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	EB Thru	0.004	0.0	A
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	52.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	184	41	1890	12	32	5	9	520	214	1877	123	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	184	41	1890	12	32	5	9	520	214	1877	123	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	11	492	3	8	1	2	135	56	489	32	4
Total Analysis Volume [veh/h]	192	43	1969	13	33	5	9	542	223	1955	128	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	14	96	29	29	27	27	27	80	80
g / C, Green / Cycle	0.09	0.60	0.18	0.18	0.17	0.17	0.17	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.13	0.47	0.01	0.01	0.15	0.15	0.14	0.38	0.09
s, saturation flow rate [veh/h]	1825	4190	1855	1635	1891	1724	1551	5150	1650
c, Capacity [veh/h]	162	2418	337	297	322	293	264	2570	823
d1, Uniform Delay [s]	72.89	26.97	54.33	54.35	64.98	64.98	64.08	32.36	21.98
k, delay calibration	0.50	0.50	0.04	0.04	0.30	0.30	0.26	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	233.00	3.14	0.04	0.04	19.89	21.34	15.83	2.18	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.45	0.81	0.08	0.08	0.90	0.90	0.84	0.76	0.17
d, Delay for Lane Group [s/veh]	305.89	30.12	54.36	54.39	84.87	86.33	79.91	34.54	22.44
Lane Group LOS	F	C	D	D	F	F	E	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.20	20.40	0.91	0.83	13.34	12.28	9.98	20.86	3.14
50th-Percentile Queue Length [ft/ln]	429.94	509.99	22.77	20.72	333.50	306.90	249.52	521.39	78.41
95th-Percentile Queue Length [veh/ln]	27.09	27.81	1.64	1.49	19.33	18.02	15.16	28.34	5.65
95th-Percentile Queue Length [ft/ln]	677.24	695.17	40.99	37.29	483.24	450.56	379.04	708.62	141.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	305.89	305.89	30.12	54.36	54.38	54.39	84.87	85.58	79.91	34.54	22.44	22.44
Movement LOS	F	F	C	D	D	D	F	F	E	C	C	C
d_A, Approach Delay [s/veh]	59.52			54.38			83.94			33.72		
Approach LOS	E			D			F			C		
d_I, Intersection Delay [s/veh]	52.60											
Intersection LOS	D											
Intersection V/C	0.730											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.427			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.73			54.89			51.89			21.90		
I_b,int, Bicycle LOS Score for Intersection	5.196			1.602			2.198			5.021		
Bicycle LOS	F			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	13.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1898	0	0	849	587	433
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1898	0	0	849	587	433
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	479	0	0	214	148	109
Total Analysis Volume [veh/h]	1917	0	0	858	593	437
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	58	58	17	17
g / C, Green / Cycle	0.73	0.73	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.55	0.24	0.18	0.17
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2532	2561	736	565
d1, Uniform Delay [s]	6.68	3.98	29.58	29.33
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.17	0.35	0.80	0.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.33	0.81	0.77
d, Delay for Lane Group [s/veh]	8.85	4.33	30.38	30.20
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.60	1.95	5.28	3.87
50th-Percentile Queue Length [ft/ln]	190.03	48.72	132.08	96.74
95th-Percentile Queue Length [veh/ln]	12.12	3.51	9.05	6.97
95th-Percentile Queue Length [ft/ln]	303.07	87.70	226.32	174.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.85	0.00	0.00	4.33	30.38	30.20
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	8.85		4.33		30.30	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	13.64					
Intersection LOS	B					
Intersection V/C	0.794					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.910	2.375
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.141	2.267	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 50s

SG: 102 19s

SG: 6 50s

SG: 8 30s

SG: 108 20s

Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	988	1030	217	1212	305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	988	1030	217	1212	305
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	252	263	54	309	78
Total Analysis Volume [veh/h]	0	1008	1051	217	1237	311
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	44	42	32	32
g / C, Green / Cycle	0.55	0.52	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.25	0.30	0.36	0.11
s, saturation flow rate [veh/h]	4000	3540	3414	2847
c, Capacity [veh/h]	2198	1852	1346	1122
d1, Uniform Delay [s]	10.84	12.91	22.99	16.46
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	1.27	1.18	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.57	0.92	0.28
d, Delay for Lane Group [s/veh]	11.53	14.18	24.17	16.51
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.86	5.92	10.46	1.85
50th-Percentile Queue Length [ft/ln]	121.54	148.00	261.55	46.27
95th-Percentile Queue Length [veh/ln]	8.48	9.91	15.77	3.33
95th-Percentile Queue Length [ft/ln]	211.95	247.76	394.16	83.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	11.53	14.18	0.00	24.17	16.51
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	11.53		14.18		22.63	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.07					
Intersection LOS	B					
Intersection V/C	0.722					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	2.801	0.000	2.591
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.391	2.427	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	35	1366	7	57	840	199	264	6	4	15	5	400
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	1.30	7.70	0.00	3.70	0.00	1.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	35	1366	7	57	840	199	264	6	4	15	5	341
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	356	2	15	219	52	69	2	1	4	1	89
Total Analysis Volume [veh/h]	36	1423	7	59	875	207	275	6	4	16	5	355
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing in	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	93	93	101	93	93	29	29	25	25
g / C, Green / Cycle	0.04	0.58	0.58	0.63	0.58	0.58	0.18	0.18	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.26	0.07	0.30	0.30	0.15	0.01	0.01	0.13
s, saturation flow rate [veh/h]	1761	3549	1859	865	1877	1738	1791	1664	1830	2820
c, Capacity [veh/h]	68	2068	1084	525	1089	1009	319	296	280	432
d1, Uniform Delay [s]	75.40	18.91	18.91	14.22	20.05	20.15	63.79	54.32	57.97	65.55
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.29	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.68	0.72	1.37	0.03	1.73	1.91	16.23	0.03	0.08	2.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.45	0.45	0.11	0.51	0.52	0.86	0.03	0.07	0.82
d, Delay for Lane Group [s/veh]	80.08	19.63	20.28	14.26	21.78	22.06	80.02	54.36	58.05	68.52
Lane Group LOS	F	B	C	B	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	10.05	10.73	0.43	12.90	12.18	12.43	0.34	0.75	7.27
50th-Percentile Queue Length [ft/ln]	38.59	251.37	268.28	10.67	322.49	304.58	310.77	8.58	18.72	181.85
95th-Percentile Queue Length [veh/ln]	2.78	15.26	16.10	0.77	18.79	17.91	18.21	0.62	1.35	11.70
95th-Percentile Queue Length [ft/ln]	69.46	381.38	402.59	19.20	469.74	447.69	455.33	15.45	33.70	292.42

Movement, Approach, & Intersection Results

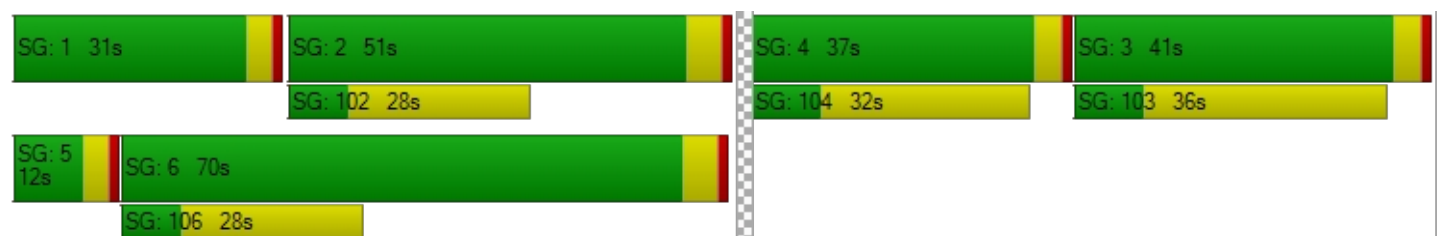
d_M, Delay for Movement [s/veh]	80.08	19.85	20.28	14.26	21.88	22.06	80.02	54.36	54.36	58.05	58.05	68.52
Movement LOS	F	B	C	B	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	21.33			21.52			79.12			67.94		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	31.80											
Intersection LOS	C											
Intersection V/C	0.659											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.004			3.149			2.112			2.543		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.57			28.18			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.366			2.501			2.030			2.277		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	768	52	172	681	58	46	14	2	67	11	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	768	52	172	681	58	46	14	2	67	11	275
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	216	15	48	191	16	13	4	1	19	3	77
Total Analysis Volume [veh/h]	2	863	58	193	765	65	52	16	2	75	12	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing in	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	35	35	12	50	50	26	26
g / C, Green / Cycle	0.43	0.43	0.15	0.62	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.11	0.22	0.22	0.09	0.25
s, saturation flow rate [veh/h]	1863	1653	1795	1885	1825	769	1590
c, Capacity [veh/h]	849	713	277	1175	1137	324	561
d1, Uniform Delay [s]	17.55	17.58	32.10	7.32	7.33	20.08	24.50
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.32
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.83	3.86	3.14	0.85	0.89	0.71	4.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.61	0.70	0.36	0.36	0.22	0.71
d, Delay for Lane Group [s/veh]	20.38	21.43	35.24	8.17	8.22	20.79	29.24
Lane Group LOS	C	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.96	6.37	3.64	3.12	3.05	1.02	7.17
50th-Percentile Queue Length [ft/ln]	173.98	159.31	90.97	78.11	76.32	25.53	179.19
95th-Percentile Queue Length [veh/ln]	11.29	10.51	6.55	5.62	5.49	1.84	11.56
95th-Percentile Queue Length [ft/ln]	282.14	262.81	163.74	140.59	137.37	45.95	288.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	20.38	20.84	21.43	35.24	8.19	8.22	20.79	20.79	20.79	29.24	29.24	29.24
Movement LOS	C	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.88			13.30			20.79			29.24		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	19.03											
Intersection LOS	B											
Intersection V/C	0.652											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.79			29.79			29.79			19.70		
I_p,int, Pedestrian LOS Score for Intersection	2.733			2.878			1.772			2.015		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.71			8.63			17.43			17.40		
I_b,int, Bicycle LOS Score for Intersection	2.321			2.404			1.675			2.213		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	520	414	276	260	369	467
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	1.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	520	172	276	260	369	40
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	135	45	72	68	96	10
Total Analysis Volume [veh/h]	542	179	288	271	384	42
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		8		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	26	51	20	17	17	17
g / C, Green / Cycle	0.34	0.67	0.26	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.30	0.11	0.16	0.14	0.20	0.03
s, saturation flow rate [veh/h]	1795	1595	1795	1870	1885	1543
c, Capacity [veh/h]	605	1065	472	419	422	345
d1, Uniform Delay [s]	23.93	4.70	24.57	26.75	28.73	23.50
k, delay calibration	0.08	0.04	0.04	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.82	0.03	0.48	7.54	26.21	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.17	0.61	0.65	0.91	0.12
d, Delay for Lane Group [s/veh]	27.74	4.73	25.05	34.29	54.94	24.22
Lane Group LOS	C	A	C	C	D	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.26	0.84	4.40	5.14	9.57	0.65
50th-Percentile Queue Length [ft/ln]	231.58	20.92	110.00	128.62	239.16	16.25
95th-Percentile Queue Length [veh/ln]	14.25	1.51	7.84	8.86	14.64	1.17
95th-Percentile Queue Length [ft/ln]	356.36	37.65	196.01	221.62	365.98	29.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.74	4.73	25.05	34.29	54.94	24.22
Movement LOS	C	A	C	C	D	C
d_A, Approach Delay [s/veh]	22.03		29.53		51.91	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	31.95					
Intersection LOS	C					
Intersection V/C	0.791					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.88	0.00	43.31
I_p,int, Pedestrian LOS Score for Intersection	2.884	0.000	3.097
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	132	527	527
d_b, Bicycle Delay [s]	33.15	20.65	20.72
I_b,int, Bicycle LOS Score for Intersection	1.560	2.482	2.967
Bicycle LOS	A	B	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	185	695	39	13	796	365	449	19	162	112	52	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	185	695	39	13	796	365	449	19	147	112	52	41
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	187	10	3	214	98	121	5	40	30	14	11
Total Analysis Volume [veh/h]	199	747	42	14	856	392	483	20	158	120	56	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	105	105	4	95	95	28	28	28	16	16
g / C, Green / Cycle	0.08	0.65	0.65	0.02	0.60	0.60	0.17	0.17	0.17	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.11	0.22	0.22	0.01	0.35	0.36	0.14	0.14	0.10	0.07	0.06
s, saturation flow rate [veh/h]	1771	1852	1813	1714	1867	1641	1774	1816	1571	1751	1746
c, Capacity [veh/h]	144	1211	1186	41	1114	979	305	312	270	175	175
d1, Uniform Delay [s]	73.44	12.19	12.20	76.76	20.02	20.33	63.75	63.75	60.80	69.50	68.67
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	209.63	0.73	0.74	1.80	2.28	2.77	3.99	3.89	1.50	3.50	2.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.38	0.33	0.33	0.34	0.59	0.60	0.82	0.82	0.59	0.69	0.57
d, Delay for Lane Group [s/veh]	283.06	12.91	12.94	78.56	22.30	23.10	67.74	67.64	62.30	73.01	70.86
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.28	6.47	6.36	0.59	15.68	14.50	10.20	10.43	6.09	4.98	4.06
50th-Percentile Queue Length [ft/ln]	357.02	161.83	159.07	14.72	391.95	362.38	255.04	260.80	152.29	124.44	101.61
95th-Percentile Queue Length [veh/ln]	22.73	10.65	10.50	1.06	22.17	20.74	15.44	15.73	10.14	8.64	7.32
95th-Percentile Queue Length [ft/ln]	568.37	266.15	262.49	26.49	554.29	518.47	385.99	393.23	253.49	215.91	182.90

Movement, Approach, & Intersection Results

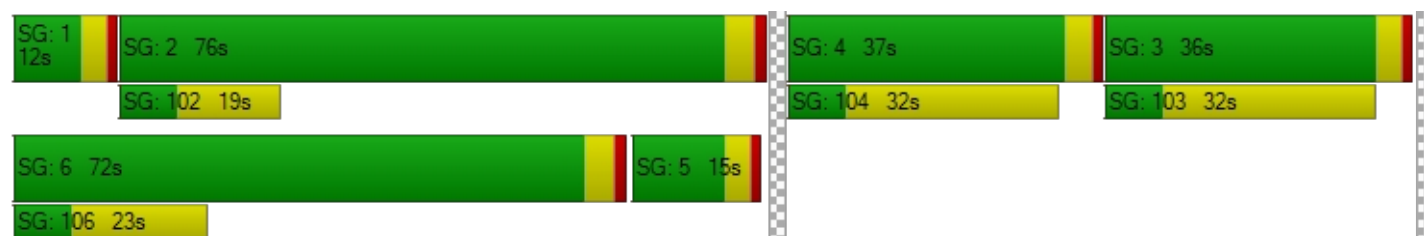
d_M, Delay for Movement [s/veh]	283.06	12.93	12.94	78.56	22.49	23.10	67.69	67.64	62.30	73.01	70.86	70.86
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	67.34			23.30			66.40			72.03		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	49.72											
Intersection LOS	D											
Intersection V/C	0.700											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.885			2.961			2.448			2.048		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.52			26.79			51.24			50.55		
I_b,int, Bicycle LOS Score for Intersection	2.375			2.601			2.675			1.923		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↷		↑↑↑↶		↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	623	61	2287	129	39	1280
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	623	61	2287	129	39	1280
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	159	16	583	33	10	327
Total Analysis Volume [veh/h]	636	62	2334	132	40	1306
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	12	12	27	27	2	34
g / C, Green / Cycle	0.21	0.21	0.48	0.48	0.04	0.60
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.46	0.08	0.02	0.26
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	740	345	2438	772	75	2963
d1, Uniform Delay [s]	21.44	18.20	14.11	8.29	26.60	6.28
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.17	0.09	1.25	0.04	2.16	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.18	0.96	0.17	0.53	0.44
d, Delay for Lane Group [s/veh]	22.61	18.30	15.36	8.33	28.76	6.32
Lane Group LOS	C	B	B	A	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.89	0.63	6.88	0.67	0.51	1.65
50th-Percentile Queue Length [ft/ln]	97.31	15.83	172.12	16.65	12.87	41.35
95th-Percentile Queue Length [veh/ln]	7.01	1.14	11.19	1.20	0.93	2.98
95th-Percentile Queue Length [ft/ln]	175.17	28.50	279.70	29.98	23.16	74.43

Movement, Approach, & Intersection Results

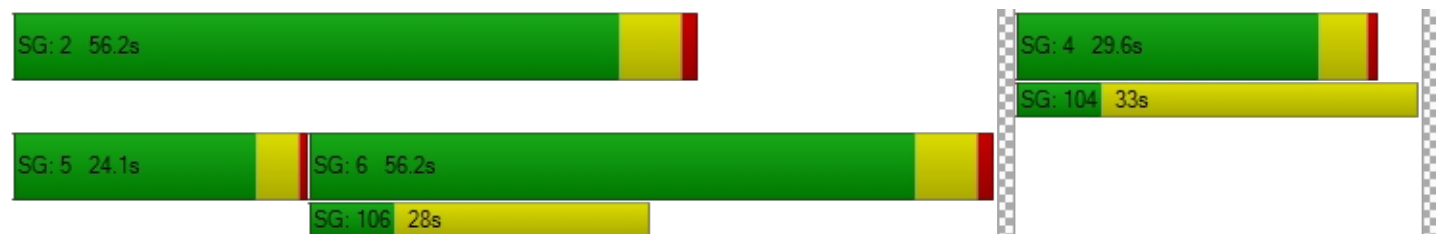
d_M, Delay for Movement [s/veh]	22.61	18.30	15.36	8.33	28.76	6.32
Movement LOS	C	B	B	A	C	A
d_A, Approach Delay [s/veh]	22.23		14.98		6.98	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.72					
Intersection LOS	B					
Intersection V/C	0.793					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.32	18.32	18.32
I_p,int, Pedestrian LOS Score for Intersection	2.282	3.505	3.350
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	885	1770	1770
d_b, Bicycle Delay [s]	8.78	0.37	0.37
I_b,int, Bicycle LOS Score for Intersection	1.560	2.916	2.300
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	2	505	14	200	87	3	132	211	55	13	6	117
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	505	14	200	87	3	132	211	55	13	6	117
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	126	4	50	22	1	33	53	14	3	2	29
Total Analysis Volume [veh/h]	2	505	14	200	87	3	132	211	55	13	6	117
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing in	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	28	28	13	13	11
g / C, Green / Cycle	0.44	0.44	0.44	0.20	0.20	0.17
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.40	0.08	0.16	0.15
s, saturation flow rate [veh/h]	1710	1539	716	1609	1626	894
c, Capacity [veh/h]	808	676	410	326	329	152
d1, Uniform Delay [s]	11.95	11.96	20.05	22.12	24.28	25.91
k, delay calibration	0.11	0.11	0.35	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	0.33	7.04	0.81	4.72	15.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.37	0.71	0.41	0.81	0.89
d, Delay for Lane Group [s/veh]	12.20	12.29	27.09	22.93	28.99	41.84
Lane Group LOS	B	B	C	C	C	D
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	2.35	2.13	4.54	1.69	4.00	2.57
50th-Percentile Queue Length [ft/ln]	58.67	53.28	113.58	42.17	99.99	64.13
95th-Percentile Queue Length [veh/ln]	4.22	3.84	8.04	3.04	7.20	4.62
95th-Percentile Queue Length [ft/ln]	105.60	95.91	200.97	75.91	179.97	115.43

Movement, Approach, & Intersection Results

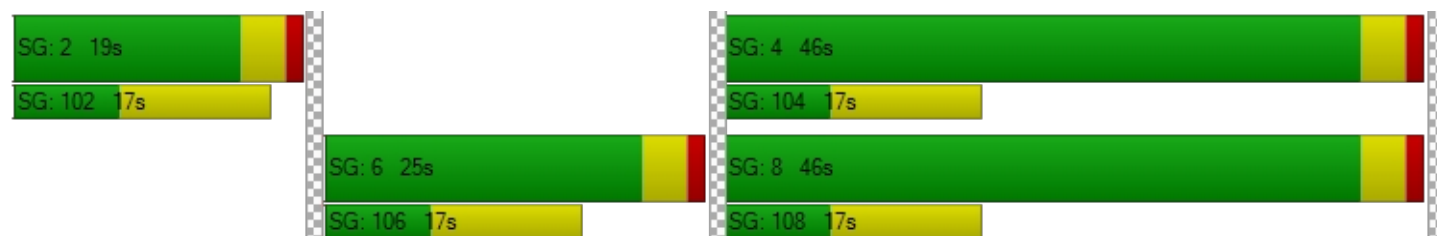
d_M, Delay for Movement [s/veh]	12.20	12.24	12.29	27.09	27.09	27.09	22.93	28.99	28.99	41.84	41.84	41.84
Movement LOS	B	B	B	C	C	C	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	12.24			27.09			26.98			41.84		
Approach LOS	B			C			C			D		
d_I, Intersection Delay [s/veh]	22.80											
Intersection LOS	C											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.77			21.77			21.77			21.77		
I_p,int, Pedestrian LOS Score for Intersection	2.141			2.260			2.057			2.254		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1320			1320			660			471		
d_b, Bicycle Delay [s]	3.68			3.68			14.29			18.59		
I_b,int, Bicycle LOS Score for Intersection	1.989			2.038			2.216			1.784		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway

Control Type:	Two-way stop	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.047

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	251	182	124	73	0	0	0	0	11	0	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	251	182	124	73	0	0	0	0	11	0	165
Peak Hour Factor	1.0000	0.8500	0.8500	0.8500	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	74	54	36	21	0	0	0	0	3	0	49
Total Analysis Volume [veh/h]	0	295	214	146	86	0	0	0	0	13	0	194
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.30
d_M, Delay for Movement [s/veh]	7.38	0.00	0.00	9.42	0.00	0.00	26.78	20.13	8.70	21.18	21.27	13.72
Movement LOS	A	A	A	A	A	A	D	C	A	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.54	0.54	0.54	0.00	0.00	0.00	1.54	1.54	1.54
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	13.38	13.38	13.38	0.00	0.00	0.00	38.55	38.55	38.55
d_A, Approach Delay [s/veh]	0.00			5.93			18.54			14.19		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	4.55											
Intersection LOS	C											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	38	104	0	1	20	67	251	5	55	2	0	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.00	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	104	0	1	20	67	251	5	55	2	0	15
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	32	0	0	6	20	77	2	17	1	0	5
Total Analysis Volume [veh/h]	46	127	0	1	24	82	306	6	67	2	0	18
Pedestrian Volume [ped/h]	31			0			1			34		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.00	0.00	0.49	0.01	0.07	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.48	0.00	0.00	8.76	0.00	0.00	18.04	18.65	16.07	12.56	11.90	9.30
Movement LOS	A	A	A	A	A	A	C	C	C	B	B	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.10	0.00	0.00	0.00	3.70	3.70	3.70	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	2.38	2.38	2.38	0.08	0.08	0.08	92.57	92.57	92.57	1.93	1.93	1.93
d_A, Approach Delay [s/veh]	1.99			0.08			17.70			9.63		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	10.68											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	241	252	2248	212	133	1042
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	241	252	2248	212	133	1042
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	68	604	57	36	280
Total Analysis Volume [veh/h]	259	271	2417	228	143	1120
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	17	17	42	42	51	51
g / C, Green / Cycle	0.21	0.21	0.54	0.54	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.09	0.20	0.53	0.16	0.55	0.25
s, saturation flow rate [veh/h]	3025	1389	4544	1421	259	4481
c, Capacity [veh/h]	643	295	2476	774	254	2960
d1, Uniform Delay [s]	26.43	29.88	17.25	9.60	17.65	5.99
k, delay calibration	0.04	0.23	0.04	0.04	0.31	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	19.87	2.00	0.08	5.53	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.92	0.98	0.29	0.56	0.38
d, Delay for Lane Group [s/veh]	26.58	49.75	19.25	9.67	23.18	6.02
Lane Group LOS	C	D	B	A	C	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.02	6.37	10.88	1.66	0.99	1.89
50th-Percentile Queue Length [ft/ln]	50.42	159.23	271.91	41.41	24.85	47.25
95th-Percentile Queue Length [veh/ln]	3.63	10.51	16.29	2.98	1.79	3.40
95th-Percentile Queue Length [ft/ln]	90.76	262.70	407.13	74.54	44.73	85.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.58	49.75	19.25	9.67	23.18	6.02
Movement LOS	C	D	B	A	C	A
d_A, Approach Delay [s/veh]	38.43		18.43		7.97	
Approach LOS	D		B		A	
d_I, Intersection Delay [s/veh]	17.84					
Intersection LOS	B					
Intersection V/C	0.873					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.70	28.70	28.70
I_p,int, Pedestrian LOS Score for Intersection	2.707	3.535	3.411
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	514	1284	1284
d_b, Bicycle Delay [s]	21.58	4.98	4.98
I_b,int, Bicycle LOS Score for Intersection	1.560	3.014	2.254
Bicycle LOS	A	C	B

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	46.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	13	244	53	23	337	37	228	38	247	34	19	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	244	53	23	337	37	228	38	247	34	19	112
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	69	15	7	96	11	65	11	70	10	5	32
Total Analysis Volume [veh/h]	15	277	60	26	383	42	259	43	281	39	22	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing m	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	41	0	9	41	0	0	46	46	0	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	9	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	5	37	5	37	42	75	20	20
g / C, Green / Cycle	0.04	0.31	0.04	0.31	0.35	0.63	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.21	0.01	0.27	0.30	0.20	0.10	0.08
s, saturation flow rate [veh/h]	1353	1638	2868	1603	992	1384	755	1442
c, Capacity [veh/h]	56	505	119	494	347	865	172	240
d1, Uniform Delay [s]	55.72	36.14	55.61	39.06	36.45	10.51	45.93	45.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.19	6.83	4.14	17.50	24.44	1.00	7.77	6.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.67	0.22	0.86	0.87	0.33	0.43	0.47
d, Delay for Lane Group [s/veh]	66.91	42.97	59.75	56.56	60.88	11.51	53.70	51.78
Lane Group LOS	E	D	E	E	E	B	D	D
Critical Lane Group	No	No	No	Yes	Yes	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.62	9.52	0.45	14.07	10.51	3.61	2.42	3.51
50th-Percentile Queue Length [ft/ln]	15.40	237.92	11.25	351.71	262.80	90.16	60.40	87.75
95th-Percentile Queue Length [veh/ln]	1.11	14.58	0.81	20.22	15.83	6.49	4.35	6.32
95th-Percentile Queue Length [ft/ln]	27.72	364.40	20.25	505.49	395.73	162.29	108.72	157.94

Movement, Approach, & Intersection Results

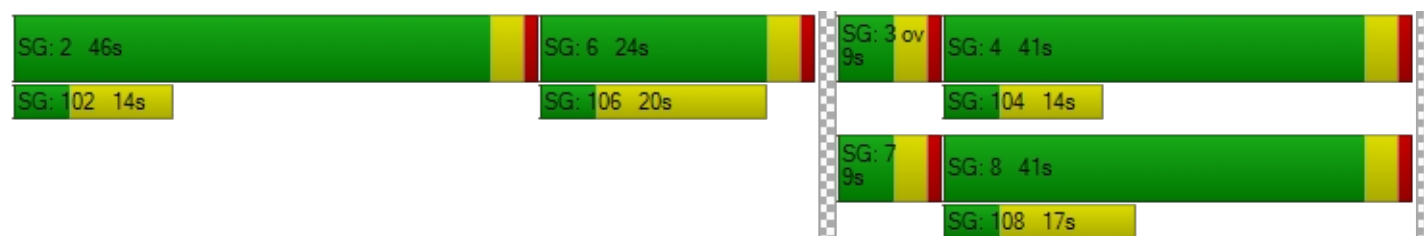
d_M, Delay for Movement [s/veh]	66.91	42.97	42.97	59.75	56.56	56.56	60.88	60.88	11.51	53.70	53.70	52.14
Movement LOS	E	D	D	E	E	E	E	E	B	D	D	D
d_A, Approach Delay [s/veh]	43.99			56.74			37.09			52.54		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	46.11											
Intersection LOS	D											
Intersection V/C	0.679											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	51.34			51.34			51.34			51.34		
I_p,int, Pedestrian LOS Score for Intersection	2.354			2.532			2.171			2.224		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			617			700			333		
d_b, Bicycle Delay [s]	28.70			28.70			25.35			41.67		
I_b,int, Bicycle LOS Score for Intersection	2.140			2.304			2.522			1.870		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	111.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.069

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	91	98	1146	164	210	137	78	1957	122	576	725	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	91	98	1146	164	210	121	78	1957	16	576	725	35
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	25	295	42	54	31	20	504	4	148	187	9
Total Analysis Volume [veh/h]	94	101	1181	169	216	125	80	2018	16	594	747	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing in	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	7	15	43	9	17	17	5	40	40	24	59	59
g / C, Green / Cycle	0.07	0.14	0.40	0.08	0.16	0.16	0.05	0.37	0.37	0.22	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.64	0.10	0.13	0.08	0.03	0.40	0.01	0.18	0.15	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1504	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	122	206	740	146	258	242	121	1884	543	733	2689	876
d1, Uniform Delay [s]	49.36	42.89	32.19	49.46	43.93	41.26	50.45	33.92	21.56	39.99	13.32	11.57
k, delay calibration	0.11	0.11	0.50	0.39	0.19	0.30	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.84	1.80	274.76	115.47	11.59	4.65	6.00	34.80	0.02	2.22	0.06	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.49	1.60	1.16	0.84	0.52	0.66	1.07	0.03	0.81	0.28	0.04
d, Delay for Lane Group [s/veh]	59.20	44.69	306.95	164.93	55.53	45.92	56.45	68.73	21.58	42.21	13.37	11.59
Lane Group LOS	E	D	F	F	E	D	E	F	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.77	1.27	24.80	8.65	3.25	3.39	1.16	22.00	0.26	7.63	3.18	0.40
50th-Percentile Queue Length [ft/ln]	69.28	31.69	619.99	216.35	81.16	84.75	29.01	550.06	6.53	190.78	79.57	10.07
95th-Percentile Queue Length [veh/ln]	4.99	2.28	41.59	14.18	5.84	6.10	2.09	31.11	0.47	12.16	5.73	0.72
95th-Percentile Queue Length [ft/ln]	124.71	57.05	1039.75	354.54	146.09	152.54	52.21	777.85	11.75	304.04	143.22	18.12

Movement, Approach, & Intersection Results

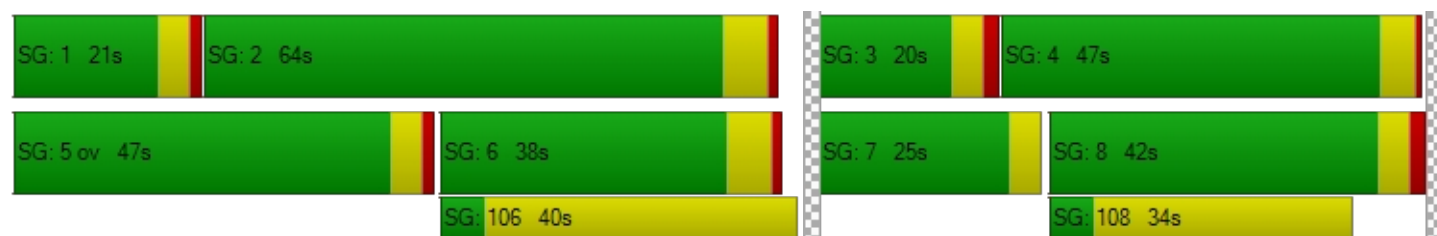
d_M, Delay for Movement [s/veh]	59.20	44.69	306.95	164.93	55.53	45.92	56.45	68.73	21.58	42.21	13.37	11.59
Movement LOS	E	D	F	F	E	D	E	F	C	D	B	B
d_A, Approach Delay [s/veh]	270.77			89.43			67.90			25.77		
Approach LOS	F			F			E			C		
d_I, Intersection Delay [s/veh]	111.07											
Intersection LOS	F											
Intersection V/C	1.069											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.29	0.00	45.29	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.111	0.000	3.312	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	790	684	594	1076
d_b, Bicycle Delay [s]	19.74	23.36	26.66	11.51
I_b,int, Bicycle LOS Score for Intersection	2.695	1.994	2.781	2.317
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	106.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.079

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	70	1858	3407	21	370	999
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	1.50	2.40	16.10	4.90	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	1858	3407	21	370	999
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	474	869	5	94	255
Total Analysis Volume [veh/h]	71	1896	3477	21	378	1019
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	8		7		0	
v_ci, Inbound Pedestrian Volume crossing mi	7		8		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	90	140	50	140
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	15	55	90	90	36	130
g / C, Green / Cycle	0.10	0.36	0.58	0.58	0.23	0.84
(v / s)_i Volume / Saturation Flow Rate	0.02	0.45	0.68	0.02	0.11	0.20
s, saturation flow rate [veh/h]	3264	4237	5077	1399	3378	5020
c, Capacity [veh/h]	317	1511	2955	814	790	4212
d1, Uniform Delay [s]	64.45	49.75	32.32	13.72	51.12	2.52
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	115.19	80.53	0.02	0.17	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	1.25	1.18	0.03	0.48	0.24
d, Delay for Lane Group [s/veh]	64.58	164.94	112.85	13.73	51.29	2.55
Lane Group LOS	E	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.30	35.31	54.81	0.30	6.17	1.25
50th-Percentile Queue Length [ft/ln]	32.49	882.81	1370.31	7.50	154.20	31.20
95th-Percentile Queue Length [veh/ln]	2.34	51.84	76.18	0.54	10.24	2.25
95th-Percentile Queue Length [ft/ln]	58.48	1295.92	1904.38	13.50	256.02	56.16

Movement, Approach, & Intersection Results

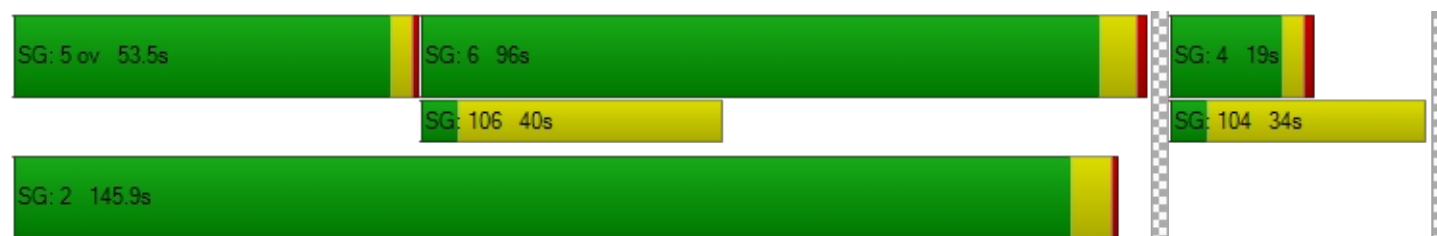
d_M, Delay for Movement [s/veh]	64.58	164.94	112.85	13.73	51.29	2.55
Movement LOS	E	F	F	B	D	A
d_A, Approach Delay [s/veh]	161.32		112.26		15.74	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	106.67					
Intersection LOS	F					
Intersection V/C	1.079					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.54	68.54	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.005	3.792	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	194	544	569
d_b, Bicycle Delay [s]	63.00	40.98	39.56
I_b,int, Bicycle LOS Score for Intersection	1.670	3.484	2.328
Bicycle LOS	A	C	B

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	311	0	0	105	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	311	0	0	105	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	78	0	0	26	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	311	0	0	105	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.58	11.83	9.94	11.58	11.83	8.79	7.42	0.00	0.00	7.88	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.12			10.73			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	311	105	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	311	105	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	78	26	0
Total Analysis Volume [veh/h]	0	0	0	311	105	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.07	8.79	7.42	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.93		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	398	0	0	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	398	0	0	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	100	0	0	3
Total Analysis Volume [veh/h]	0	0	398	0	0	11
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.01	10.52	0.00	0.00	8.10	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.77		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_AM.vistro
Report File: P:\...\2025 AM.pdf

Scenario 19 Near Term (2025) AM

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.814	58.8	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.957	30.8	C
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.890	19.8	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NB Left	0.732	19.3	B
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.758	23.9	C
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.882	37.6	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.765	40.4	D
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.745	12.7	B
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.432	230.9	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	WB Left	0.438	56.6	F
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.019	291.3	F
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.912	33.8	C
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.647	33.8	C
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	1.007	137.7	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Left	0.770	14.1	B
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	WB Thru	0.003	0.0	A
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	WB Thru	0.003	0.0	A

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	EB Thru	0.009	0.0	A
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	58.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	162	27	1088	10	30	7	8	344	296	2030	558	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1088	10	30	7	8	344	296	2030	558	34
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	7	283	3	8	2	2	90	77	529	145	9
Total Analysis Volume [veh/h]	169	28	1133	10	31	7	8	358	308	2115	581	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.27	0.01	0.01	0.12	0.12	0.21	0.42	0.34
s, saturation flow rate [veh/h]	1822	4123	1863	1610	1623	1480	1438	5075	1800
c, Capacity [veh/h]	115	2272	339	293	318	290	282	2532	898
d1, Uniform Delay [s]	74.94	22.17	54.28	54.32	58.62	58.62	63.69	34.45	30.55
k, delay calibration	0.50	0.50	0.04	0.04	0.16	0.16	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	353.01	0.79	0.03	0.04	2.76	3.02	80.54	3.45	4.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.71	0.50	0.07	0.08	0.60	0.60	1.09	0.84	0.69
d, Delay for Lane Group [s/veh]	427.95	22.96	54.31	54.36	61.39	61.65	144.23	37.90	34.80
Lane Group LOS	F	C	D	D	E	E	F	D	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	16.08	9.04	0.86	0.78	7.37	6.74	17.71	24.22	19.20
50th-Percentile Queue Length [ft/ln]	401.90	225.99	21.43	19.47	184.32	168.57	442.84	605.48	479.96
95th-Percentile Queue Length [veh/ln]	25.95	13.97	1.54	1.40	11.83	11.00	25.80	32.29	26.38
95th-Percentile Queue Length [ft/ln]	648.78	349.26	38.58	35.04	295.65	275.04	644.88	807.25	659.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	427.95	427.95	22.96	54.31	54.34	54.36	61.39	61.52	144.23	37.90	34.80	34.80
Movement LOS	F	F	C	D	D	D	E	E	F	D	C	C
d_A, Approach Delay [s/veh]	82.95			54.33			99.31			37.20		
Approach LOS	F			D			F			D		
d_I, Intersection Delay [s/veh]	58.84											
Intersection LOS	E											
Intersection V/C	0.814											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.508			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.76			54.89			52.34			21.90		
I_b,int, Bicycle LOS Score for Intersection	3.754			1.599			2.116			6.066		
Bicycle LOS	D			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.957

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1644	0	0	858	771	1037
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1644	0	0	858	771	1037
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	424	0	0	221	199	267
Total Analysis Volume [veh/h]	1695	0	0	885	795	1069
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.49	0.26	0.23	0.39
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	12.86	8.87	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.76	0.66	0.23	51.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.43	0.66	1.10
d, Delay for Lane Group [s/veh]	16.62	9.53	22.10	77.56
Lane Group LOS	B	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.21	3.84	6.00	15.54
50th-Percentile Queue Length [ft/ln]	280.19	95.95	149.89	388.47
95th-Percentile Queue Length [veh/ln]	16.70	6.91	10.01	23.40
95th-Percentile Queue Length [ft/ln]	417.44	172.71	250.29	585.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	16.62	0.00	0.00	9.53	22.10	77.56
Movement LOS	B			A	C	F
d_A, Approach Delay [s/veh]	16.62		9.53		53.91	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	30.85					
Intersection LOS	C					
Intersection V/C	0.957					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.016	2.579
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	2.958	2.290	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG: 2 50s

SG: 102 19s

SG: 6 50s

SG: 8 30s

SG: 108 20s

Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	935	1471	217	1272	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	935	1471	217	1272	502
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	239	375	54	324	128
Total Analysis Volume [veh/h]	0	954	1501	217	1298	512
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.51	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.43	0.38	0.18
s, saturation flow rate [veh/h]	4000	3515	3373	2782
c, Capacity [veh/h]	2125	1775	1390	1147
d1, Uniform Delay [s]	11.50	17.06	22.40	16.89
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	5.17	1.39	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.85	0.93	0.45
d, Delay for Lane Group [s/veh]	12.19	22.22	23.79	16.99
Lane Group LOS	B	C	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.77	11.59	10.98	3.20
50th-Percentile Queue Length [ft/ln]	119.23	289.69	274.60	80.06
95th-Percentile Queue Length [veh/ln]	8.35	17.17	16.42	5.76
95th-Percentile Queue Length [ft/ln]	208.77	429.26	410.48	144.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.19	22.22	0.00	23.79	16.99
Movement LOS		B	C		C	B
d_A, Approach Delay [s/veh]	12.19		22.22		21.87	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	19.83					
Intersection LOS	B					
Intersection V/C	0.890					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	27.17
I_p,int, Pedestrian LOS Score for Intersection	2.970	0.000	2.643
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.77	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.347	2.798	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	29	1162	7	448	1250	301	225	19	0	13	4	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	1.70	0.00	0.00	0.00	0.00	12.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	29	1162	7	448	1250	301	225	19	0	13	4	0
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	323	2	124	347	84	63	5	0	4	1	0
Total Analysis Volume [veh/h]	32	1291	8	498	1389	334	250	21	0	14	4	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	107	107	121	113	113	27	27	6	6
g / C, Green / Cycle	0.04	0.67	0.67	0.76	0.71	0.71	0.17	0.17	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.47	0.47	0.50	0.14	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1758	3532	1849	1070	1840	1722	1785	1900	1829	2572
c, Capacity [veh/h]	63	2365	1238	807	1305	1222	295	314	72	101
d1, Uniform Delay [s]	75.68	11.50	11.50	8.98	12.68	13.49	64.71	56.27	74.49	0.00
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.23	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.43	0.82	3.52	2.63	3.43	13.14	0.07	1.34	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.36	0.36	0.62	0.66	0.71	0.85	0.07	0.25	0.00
d, Delay for Lane Group [s/veh]	80.37	11.93	12.32	12.50	15.31	16.93	77.84	56.33	75.83	0.00
Lane Group LOS	F	B	B	B	B	B	E	E	E	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.38	6.64	7.09	2.87	16.82	18.05	11.08	0.74	0.75	0.00
50th-Percentile Queue Length [ft/ln]	34.41	165.99	177.18	71.77	420.60	451.31	276.93	18.40	18.86	0.00
95th-Percentile Queue Length [veh/ln]	2.48	10.87	11.45	5.17	23.55	25.02	16.54	1.32	1.36	0.00
95th-Percentile Queue Length [ft/ln]	61.94	271.64	286.33	129.19	588.76	625.51	413.39	33.12	33.94	0.00

Movement, Approach, & Intersection Results

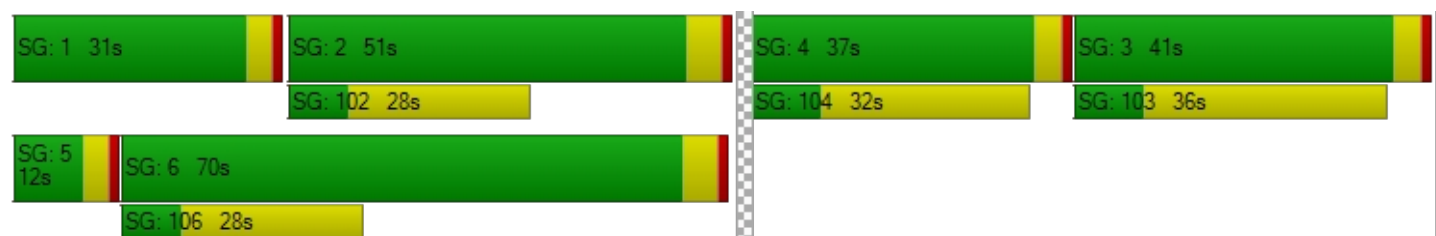
d_M, Delay for Movement [s/veh]	80.37	12.06	12.32	12.50	15.93	16.93	77.84	56.33	56.33	75.83	75.83	0.00
Movement LOS	F	B	B	B	B	B	E	E	E	E	E	A
d_A, Approach Delay [s/veh]	13.70			15.31			76.18			75.83		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	19.33											
Intersection LOS	B											
Intersection V/C	0.732											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.065			3.242			2.141			2.992		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.59			28.16			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.292			3.392			2.007			1.687		
Bicycle LOS	B			C			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 23.9
 Level Of Service: C
 Volume to Capacity (v/c): 0.758

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	810	85	316	755	66	220	66	2	40	21	202
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	810	85	316	755	66	220	66	2	40	21	202
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	207	22	81	193	17	56	17	1	10	5	52
Total Analysis Volume [veh/h]	0	827	87	322	770	67	224	67	2	41	21	206
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			12			9			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	29	29	16	48	48	28	28
g / C, Green / Cycle	0.36	0.36	0.20	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.19	0.23	0.24	0.27	0.16
s, saturation flow rate [veh/h]	1882	1652	1708	1807	1747	1075	1638
c, Capacity [veh/h]	714	588	342	1073	1037	454	623
d1, Uniform Delay [s]	22.43	22.43	31.57	8.65	8.66	24.64	20.46
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.35	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.19	7.68	12.30	1.09	1.14	4.92	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.73	0.94	0.40	0.40	0.64	0.43
d, Delay for Lane Group [s/veh]	27.62	30.12	43.87	9.74	9.81	29.56	21.47
Lane Group LOS	C	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.38	7.71	6.99	3.60	3.52	5.57	3.92
50th-Percentile Queue Length [ft/ln]	209.45	192.80	174.86	90.07	88.12	139.30	98.09
95th-Percentile Queue Length [veh/ln]	13.13	12.27	11.33	6.49	6.34	9.44	7.06
95th-Percentile Queue Length [ft/ln]	328.13	306.66	283.29	162.13	158.62	236.09	176.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.62	28.65	30.12	43.87	9.77	9.81	29.56	29.56	29.56	21.47	21.47	21.47
Movement LOS	C	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	28.79			19.25			29.56			21.47		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	23.93											
Intersection LOS	C											
Intersection V/C	0.758											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.79			29.79			29.79			19.70		
I_p,int, Pedestrian LOS Score for Intersection	2.674			3.162			1.863			2.054		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.70			8.68			17.47			17.41		
I_b,int, Bicycle LOS Score for Intersection	2.314			2.516			2.043			2.002		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	492	286	421	346	271	507
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	3.00	2.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	492	44	421	346	271	80
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	12	111	91	71	21
Total Analysis Volume [veh/h]	518	46	443	364	285	84
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	3		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		23		22	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	25	52	21	17	17	17
g / C, Green / Cycle	0.33	0.67	0.27	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.30	0.03	0.25	0.19	0.15	0.06
s, saturation flow rate [veh/h]	1724	1559	1781	1870	1885	1525
c, Capacity [veh/h]	573	1047	485	414	417	337
d1, Uniform Delay [s]	24.49	4.26	27.09	28.94	27.46	24.61
k, delay calibration	0.08	0.04	0.28	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.33	0.01	15.86	22.52	8.78	1.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.04	0.91	0.88	0.68	0.25
d, Delay for Lane Group [s/veh]	28.83	4.26	42.96	51.45	36.24	26.37
Lane Group LOS	C	A	D	D	D	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.10	0.20	9.58	8.78	5.62	1.38
50th-Percentile Queue Length [ft/ln]	227.40	4.92	239.61	219.50	140.44	34.50
95th-Percentile Queue Length [veh/ln]	14.04	0.35	14.66	13.64	9.50	2.48
95th-Percentile Queue Length [ft/ln]	351.06	8.86	366.54	340.98	237.61	62.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.83	4.26	42.96	51.45	36.24	26.37
Movement LOS	C	A	D	D	D	C
d_A, Approach Delay [s/veh]	26.82		46.79		33.99	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	37.60					
Intersection LOS	D					
Intersection V/C	0.882					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.29	0.00	43.73
I_p,int, Pedestrian LOS Score for Intersection	2.894	0.000	3.102
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	130	521	521
d_b, Bicycle Delay [s]	33.53	21.21	21.19
I_b,int, Bicycle LOS Score for Intersection	1.560	2.891	2.873
Bicycle LOS	A	C	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	40.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	135	845	84	29	1029	424	581	55	163	35	16	25
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	135	845	84	29	1029	424	581	55	148	35	16	25
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	218	22	7	265	109	150	14	38	9	4	6
Total Analysis Volume [veh/h]	139	871	87	30	1061	437	599	57	153	36	16	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	99	99	5	92	92	36	36	36	12	12
g / C, Green / Cycle	0.08	0.62	0.62	0.03	0.57	0.57	0.22	0.22	0.22	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.02	0.43	0.44	0.19	0.19	0.10	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1809	1704	1823	1647	1717	1702	1525	1439	1196
c, Capacity [veh/h]	142	1167	1125	58	1049	947	380	377	338	104	86
d1, Uniform Delay [s]	73.29	15.42	15.45	75.88	25.10	25.73	59.95	59.90	53.70	70.60	71.34
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.13	0.12	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	69.46	1.10	1.15	2.58	4.68	5.82	6.94	6.76	0.70	1.47	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.42	0.42	0.51	0.74	0.76	0.87	0.86	0.45	0.35	0.49
d, Delay for Lane Group [s/veh]	142.75	16.52	16.60	78.45	29.77	31.54	66.89	66.66	54.41	72.07	74.48
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.44	9.36	9.10	1.26	22.64	21.87	13.77	13.57	5.48	1.47	1.75
50th-Percentile Queue Length [ft/ln]	210.97	233.94	227.42	31.42	565.94	546.82	344.16	339.36	136.98	36.66	43.85
95th-Percentile Queue Length [veh/ln]	13.20	14.37	14.04	2.26	30.44	29.54	19.85	19.62	9.32	2.64	3.16
95th-Percentile Queue Length [ft/ln]	330.08	359.36	351.07	56.56	761.01	738.58	496.28	490.42	232.96	65.99	78.93

Movement, Approach, & Intersection Results

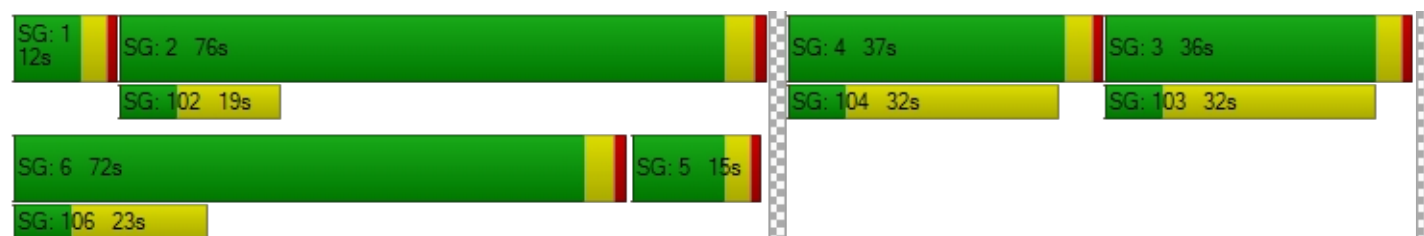
d_M, Delay for Movement [s/veh]	142.75	16.55	16.60	78.45	30.25	31.54	66.79	66.66	54.41	72.07	74.48	74.48
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	32.55			31.57			64.44			73.37		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	40.37											
Intersection LOS	D											
Intersection V/C	0.765											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.928			3.053			2.467			2.036		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.465			2.820			2.919			1.688		
Bicycle LOS	B			C			C			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	557	86	1542	300	156	2050
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	557	86	1542	300	156	2050
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	144	22	397	77	40	528
Total Analysis Volume [veh/h]	574	89	1590	309	161	2113
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	10	10	16	16	5	26
g / C, Green / Cycle	0.22	0.22	0.35	0.35	0.11	0.55
(v / s)_i Volume / Saturation Flow Rate	0.18	0.06	0.32	0.21	0.09	0.42
s, saturation flow rate [veh/h]	3173	1509	4959	1492	1810	5024
c, Capacity [veh/h]	689	328	1741	524	207	2777
d1, Uniform Delay [s]	17.56	15.29	14.54	12.39	20.21	8.10
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.03	0.16	0.85	0.39	2.39	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.27	0.91	0.59	0.78	0.76
d, Delay for Lane Group [s/veh]	18.59	15.45	15.39	12.79	22.60	8.27
Lane Group LOS	B	B	B	B	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.74	0.73	3.94	1.95	1.54	2.79
50th-Percentile Queue Length [ft/ln]	68.41	18.17	98.59	48.71	38.60	69.65
95th-Percentile Queue Length [veh/ln]	4.93	1.31	7.10	3.51	2.78	5.01
95th-Percentile Queue Length [ft/ln]	123.14	32.71	177.47	87.68	69.48	125.36

Movement, Approach, & Intersection Results

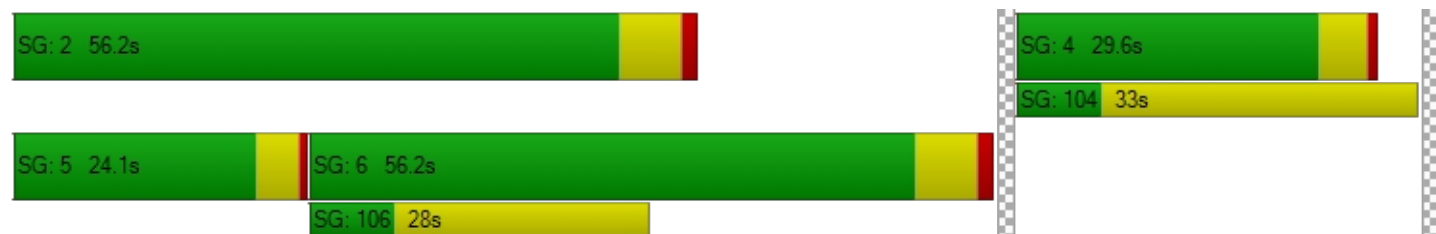
d_M, Delay for Movement [s/veh]	18.59	15.45	15.39	12.79	22.60	8.27
Movement LOS	B	B	B	B	C	A
d_A, Approach Delay [s/veh]	18.17		14.97		9.28	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	12.73					
Intersection LOS	B					
Intersection V/C	0.745					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.71	13.71	13.71
I_p,int, Pedestrian LOS Score for Intersection	2.324	3.526	3.382
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1068	2135	2135
d_b, Bicycle Delay [s]	5.09	0.11	0.11
I_b,int, Bicycle LOS Score for Intersection	1.560	2.604	2.810
Bicycle LOS	A	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	230.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.432

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	266	42	97	291	80	198	349	305	42	58	281
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	17.90	100.0	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	266	42	97	291	80	198	349	305	42	58	281
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	74	12	27	81	22	55	97	85	12	16	78
Total Analysis Volume [veh/h]	0	296	47	108	323	89	220	388	339	47	64	312
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.56	0.16	0.46	0.41
s, saturation flow rate [veh/h]	1374	1266	934	1357	1567	1030
c, Capacity [veh/h]	440	373	318	400	461	302
d1, Uniform Delay [s]	28.78	29.17	40.31	30.24	35.92	35.99
k, delay calibration	0.11	0.11	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	0.84	300.16	1.32	269.19	199.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.45	1.64	0.55	1.58	1.40
d, Delay for Lane Group [s/veh]	29.37	30.00	340.47	31.56	305.11	235.60
Lane Group LOS	C	C	F	C	F	F
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.50	3.37	34.58	4.63	45.69	24.04
50th-Percentile Queue Length [ft/ln]	87.42	84.18	864.47	115.86	1142.17	600.94
95th-Percentile Queue Length [veh/ln]	6.29	6.06	55.46	8.16	70.86	38.06
95th-Percentile Queue Length [ft/ln]	157.35	151.53	1386.39	204.12	1771.62	951.56

Movement, Approach, & Intersection Results

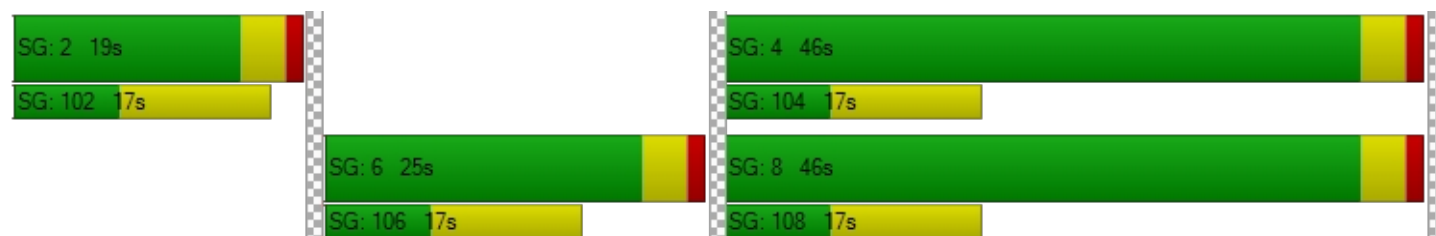
d_M, Delay for Movement [s/veh]	29.37	29.63	30.00	340.47	340.47	340.47	31.56	305.11	305.11	235.60	235.60	235.60
Movement LOS	C	C	C	F	F	F	C	F	F	F	F	F
d_A, Approach Delay [s/veh]	29.68			340.47			241.56			235.60		
Approach LOS	C			F			F			F		
d_I, Intersection Delay [s/veh]	230.92											
Intersection LOS	F											
Intersection V/C	1.432											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	40.55			40.55			40.55			40.55		
I_p,int, Pedestrian LOS Score for Intersection	2.288			2.384			2.303			2.345		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	824			824			412			294		
d_b, Bicycle Delay [s]	17.61			17.61			32.12			37.06		
I_b,int, Bicycle LOS Score for Intersection	1.843			2.418			3.122			2.258		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Two-way stop	Delay (sec / veh):	56.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.438

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	153	113	304	334	0	0	0	0	44	0	155
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	153	113	304	334	0	0	0	0	44	0	155
Peak Hour Factor	1.000	0.910	0.910	0.910	0.910	1.000	1.000	1.000	1.000	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	42	31	84	92	0	0	0	0	12	0	43
Total Analysis Volume [veh/h]	0	168	124	334	367	0	0	0	0	48	0	170
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.22
d_M, Delay for Movement [s/veh]	8.02	0.00	0.00	8.86	0.00	0.00	53.73	39.68	10.31	56.57	55.54	28.38
Movement LOS	A	A	A	A	A	A	F	E	B	F	F	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	1.07	1.07	1.07	0.00	0.00	0.00	4.41	4.41	4.41
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	26.64	26.64	26.64	0.00	0.00	0.00	110.29	110.29	110.29
d_A, Approach Delay [s/veh]	0.00			4.22			34.57			34.59		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.67											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	291.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	70	52	0	35	155	188	211	3	33	1	0	3
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.0	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	52	0	35	155	188	211	3	33	1	0	3
Peak Hour Factor	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	18	0	12	54	65	73	1	11	0	0	1
Total Analysis Volume [veh/h]	97	72	0	49	215	261	293	4	46	1	0	4
Pedestrian Volume [ped/h]	70			0			137			17		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.00	0.00	0.05	0.00	0.00	1.38	0.02	0.11	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	9.79	0.00	0.00	8.61	0.00	0.00	290.89	291.32	282.25	23.25	25.82	8.82
Movement LOS	A	A	A	A	A	A	F	F	F	C	D	A
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.39	0.15	0.15	0.15	20.68	20.68	20.68	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	9.64	9.64	9.64	3.68	3.68	3.68	516.93	516.93	516.93	0.70	0.70	0.70
d_A, Approach Delay [s/veh]	5.62			0.80			289.73			11.70		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	96.74											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	176	275	1564	528	486	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	275	1564	528	486	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	72	412	139	128	517
Total Analysis Volume [veh/h]	185	289	1646	556	512	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	41	41	70	70
g / C, Green / Cycle	0.20	0.20	0.41	0.41	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.37	0.40	0.74	0.46
s, saturation flow rate [veh/h]	3078	1188	4470	1393	690	4518
c, Capacity [veh/h]	614	237	1842	574	535	3172
d1, Uniform Delay [s]	34.21	40.16	27.46	28.88	30.14	8.21
k, delay calibration	0.04	0.50	0.04	0.26	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	130.91	0.65	20.62	29.76	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	1.22	0.89	0.97	0.96	0.65
d, Delay for Lane Group [s/veh]	34.32	171.07	28.11	49.50	59.90	8.29
Lane Group LOS	C	F	C	D	E	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.92	14.36	11.05	14.94	8.05	6.04
50th-Percentile Queue Length [ft/ln]	47.98	358.91	276.24	373.60	201.17	151.00
95th-Percentile Queue Length [veh/ln]	3.45	22.60	16.50	21.28	12.70	10.07
95th-Percentile Queue Length [ft/ln]	86.36	564.98	412.52	532.09	317.48	251.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.32	171.07	28.11	49.50	59.90	8.29
Movement LOS	C	F	C	D	E	A
d_A, Approach Delay [s/veh]	117.70		33.51		18.54	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	33.76					
Intersection LOS	C					
Intersection V/C	0.912					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.74	39.74	39.74
I_p,int, Pedestrian LOS Score for Intersection	3.023	3.635	3.542
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	399	997	997
d_b, Bicycle Delay [s]	32.13	12.60	12.60
I_b,int, Bicycle LOS Score for Intersection	1.560	2.771	2.978
Bicycle LOS	A	C	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	110	257	142	556	204	423	87	7	105	30	17	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	257	142	556	204	423	87	7	105	30	17	61
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	28	66	36	142	52	108	22	2	27	8	4	16
Total Analysis Volume [veh/h]	112	262	145	567	208	432	89	7	107	31	17	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	37	0	20	37	0	0	24	24	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	9	43	21	56	12	36	8	8
g / C, Green / Cycle	0.09	0.43	0.21	0.56	0.12	0.36	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.07	0.29	0.18	0.43	0.09	0.10	0.06	0.04
s, saturation flow rate [veh/h]	1572	1416	3105	1487	1118	1094	848	1372
c, Capacity [veh/h]	143	614	662	827	131	397	123	104
d1, Uniform Delay [s]	44.50	22.52	37.86	17.31	42.61	22.37	45.50	44.73
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.05	5.57	3.32	6.98	7.58	0.36	2.03	5.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.66	0.86	0.77	0.73	0.27	0.39	0.59
d, Delay for Lane Group [s/veh]	53.55	28.09	41.17	24.29	50.19	22.73	47.53	50.02
Lane Group LOS	D	C	D	C	D	C	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.06	8.30	6.88	12.23	2.55	1.79	1.24	1.62
50th-Percentile Queue Length [ft/ln]	76.42	207.43	172.11	305.84	63.71	44.70	31.10	40.50
95th-Percentile Queue Length [veh/ln]	5.50	13.02	11.19	17.97	4.59	3.22	2.24	2.92
95th-Percentile Queue Length [ft/ln]	137.56	325.53	279.69	449.24	114.68	80.46	55.97	72.90

Movement, Approach, & Intersection Results

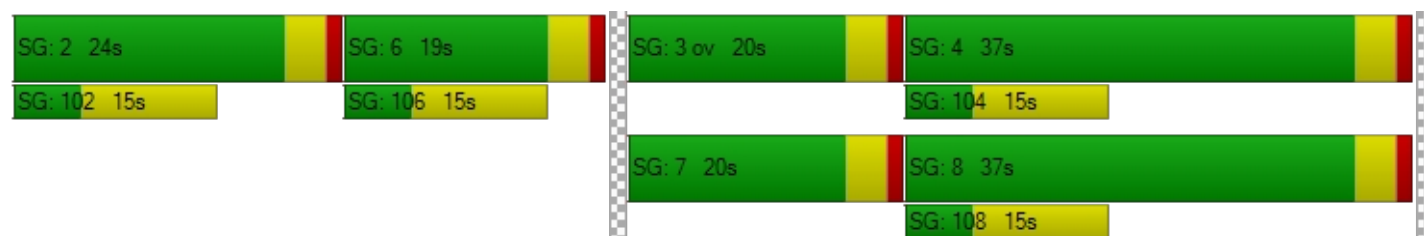
d_M, Delay for Movement [s/veh]	53.55	28.09	28.09	41.17	24.29	24.29	50.19	50.19	22.73	47.53	47.53	49.79
Movement LOS	D	C	C	D	C	C	D	D	C	D	D	D
d_A, Approach Delay [s/veh]	33.59			32.22			35.72			48.92		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.82											
Intersection LOS	C											
Intersection V/C	0.647											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	41.41			41.41			41.41			41.41		
I_p,int, Pedestrian LOS Score for Intersection	2.272			2.622			2.195			2.340		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	660			660			400			300		
d_b, Bicycle Delay [s]	22.45			22.45			32.00			36.13		
I_b,int, Bicycle LOS Score for Intersection	2.416			3.551			1.895			1.741		
Bicycle LOS	B			D			A			A		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	137.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.007

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	210	456	277	42	93	79	382	459	172	1167	2217	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	210	456	277	42	93	63	382	459	66	1167	2217	72
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	116	71	11	24	16	97	117	17	298	566	18
Total Analysis Volume [veh/h]	214	465	283	43	95	64	390	468	67	1191	2262	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	16	15	45	9	9	9	15	40	40	25	50	50
g / C, Green / Cycle	0.15	0.14	0.41	0.08	0.08	0.08	0.14	0.37	0.37	0.23	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.13	0.30	0.16	0.03	0.08	0.06	0.12	0.10	0.05	0.36	0.45	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1078	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	245	220	720	104	101	88	474	1808	535	756	2282	734
d1, Uniform Delay [s]	45.85	47.25	22.94	47.98	50.23	49.21	45.97	24.33	23.08	42.49	29.77	17.13
k, delay calibration	0.19	0.45	0.11	0.11	0.11	0.14	0.11	0.11	0.11	0.28	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.22	512.91	0.35	2.60	29.70	13.41	3.65	0.08	0.10	262.02	6.95	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	2.11	0.39	0.41	0.94	0.72	0.82	0.26	0.13	1.57	0.99	0.10
d, Delay for Lane Group [s/veh]	61.08	560.16	23.29	50.58	79.93	62.63	49.62	24.41	23.18	304.52	36.73	17.19
Lane Group LOS	E	F	C	D	E	E	D	C	C	F	D	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.61	18.64	1.68	1.21	1.73	2.07	5.39	2.84	1.17	37.65	20.32	1.06
50th-Percentile Queue Length [ft/ln]	165.18	466.00	41.93	30.33	43.30	51.68	134.77	71.11	29.23	941.32	507.99	26.55
95th-Percentile Queue Length [veh/ln]	10.82	31.59	3.02	2.18	3.12	3.72	9.20	5.12	2.10	58.38	27.71	1.91
95th-Percentile Queue Length [ft/ln]	270.56	789.82	75.48	54.60	77.94	93.03	229.96	128.00	52.61	1459.43	692.81	47.80

Movement, Approach, & Intersection Results

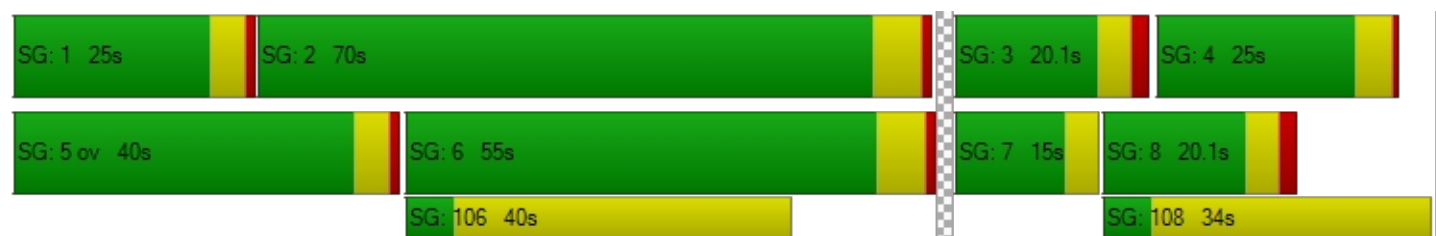
d_M, Delay for Movement [s/veh]	61.08	560.16	23.29	50.58	79.93	62.63	49.62	24.41	23.18	304.52	36.73	17.19
Movement LOS	E	F	C	D	E	E	D	C	C	F	D	B
d_A, Approach Delay [s/veh]	291.20			68.20			34.95			126.78		
Approach LOS	F			E			C			F		
d_I, Intersection Delay [s/veh]	137.71											
Intersection LOS	F											
Intersection V/C	1.007											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	46.29			0.00			46.29			0.00		
I_p,int, Pedestrian LOS Score for Intersection	3.120			0.000			3.325			0.000		
Crosswalk LOS	C			F			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	375			273			892			1165		
d_b, Bicycle Delay [s]	36.25			40.94			16.85			9.56		
I_b,int, Bicycle LOS Score for Intersection	2.353			1.739			2.127			3.499		
Bicycle LOS	B			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	336	416	831	88	1219	2768
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	3.60	5.40	3.50	1.60	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	336	416	831	88	1219	2768
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	107	214	23	314	713
Total Analysis Volume [veh/h]	346	429	857	91	1257	2854
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	7		6		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	6		7		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	35	110	75	110
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	74	74	74	74	74	74
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	10	44	20	20	30	54
g / C, Green / Cycle	0.14	0.60	0.27	0.27	0.41	0.73
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.17	0.06	0.36	0.57
s, saturation flow rate [veh/h]	3453	4166	4955	1548	3470	5049
c, Capacity [veh/h]	476	2496	1348	421	1412	3676
d1, Uniform Delay [s]	30.47	6.61	23.62	20.74	20.33	6.28
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.80	0.01	0.61	0.31	0.81	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.17	0.64	0.22	0.89	0.78
d, Delay for Lane Group [s/veh]	31.27	6.62	24.23	21.04	21.14	6.72
Lane Group LOS	C	A	C	C	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.85	0.81	3.83	1.09	8.16	3.54
50th-Percentile Queue Length [ft/ln]	71.17	20.37	95.77	27.15	203.89	88.39
95th-Percentile Queue Length [veh/ln]	5.12	1.47	6.90	1.95	12.84	6.36
95th-Percentile Queue Length [ft/ln]	128.11	36.67	172.38	48.87	320.97	159.09

Movement, Approach, & Intersection Results

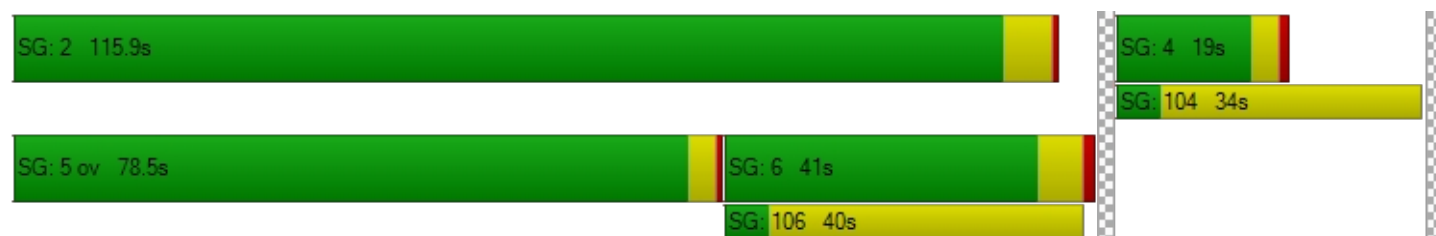
d_M, Delay for Movement [s/veh]	31.27	6.62	24.23	21.04	21.14	6.72
Movement LOS	C	A	C	C	C	A
d_A, Approach Delay [s/veh]	17.63		23.92		11.13	
Approach LOS	B		C		B	
d_I, Intersection Delay [s/veh]	14.07					
Intersection LOS	B					
Intersection V/C	0.770					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.38	28.38	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.930	3.645	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	407	950	380
d_b, Bicycle Delay [s]	23.35	10.14	24.17
I_b,int, Bicycle LOS Score for Intersection	1.670	2.081	3.821
Bicycle LOS	A	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	247	0	0	259	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	247	0	0	259	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	62	0	0	65	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	247	0	0	259	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.55	12.68	9.55	12.55	12.68	9.62	7.76	0.00	0.00	7.73	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.59			11.61			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	247	259	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	247	259	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	62	65	0
Total Analysis Volume [veh/h]	0	0	0	247	259	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.84	9.62	7.76	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.73		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	852	0	0	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	852	0	0	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	213	0	0	35
Total Analysis Volume [veh/h]	0	0	852	0	0	138
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	18.18	15.02	0.00	0.00	9.58	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.60		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_PM.vistro

Scenario 19 Near Term (2025) PM

Report File: P:\...\2025 PM.pdf

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.808	60.6	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.911	17.8	B
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.744	17.7	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	EB Left	0.679	32.7	C
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.640	18.7	B
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	WB Thru	0.841	38.1	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.718	55.1	E
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.847	20.3	C
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Left	1.133	73.7	E
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	WB Left	0.050	20.8	C
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.018	45.5	E
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.064	57.6	E
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	EB Left	1.141	171.1	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Right	1.073	113.0	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Right	1.076	105.4	F
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	EB Thru	0.004	0.0	A
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	EB Thru	0.004	0.0	A

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	EB Thru	0.005	0.0	A
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Bayfront Expy/Marsh Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 60.6
Level Of Service: E
Volume to Capacity (v/c): 0.808

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	179	40	1610	12	31	5	9	607	208	2131	455	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1610	12	31	5	9	607	208	2131	455	14
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	10	419	3	8	1	2	158	54	555	118	4
Total Analysis Volume [veh/h]	186	42	1677	13	32	5	9	632	217	2220	474	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	11	93	29	29	30	30	30	80	80
g / C, Green / Cycle	0.07	0.58	0.18	0.18	0.19	0.19	0.19	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.12	0.40	0.01	0.01	0.18	0.18	0.14	0.43	0.29
s, saturation flow rate [veh/h]	1826	4190	1854	1633	1891	1724	1553	5150	1675
c, Capacity [veh/h]	125	2334	337	297	360	328	296	2571	836
d1, Uniform Delay [s]	74.51	26.15	54.31	54.34	63.75	63.75	60.76	35.27	28.34
k, delay calibration	0.50	0.50	0.04	0.04	0.39	0.39	0.25	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	398.35	1.94	0.04	0.04	27.91	29.71	7.81	4.15	2.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.82	0.72	0.08	0.08	0.93	0.93	0.73	0.86	0.58
d, Delay for Lane Group [s/veh]	472.85	28.09	54.35	54.38	91.66	93.46	68.56	39.41	31.33
Lane Group LOS	F	C	D	D	F	F	E	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.05	16.08	0.89	0.81	16.28	15.00	8.96	26.16	14.06
50th-Percentile Queue Length [ft/ln]	476.21	401.88	22.32	20.31	407.12	375.07	224.04	654.09	351.57
95th-Percentile Queue Length [veh/ln]	30.48	22.65	1.61	1.46	22.90	21.36	13.87	34.55	20.21
95th-Percentile Queue Length [ft/ln]	762.05	566.26	40.18	36.55	572.57	533.88	346.77	863.81	505.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	472.85	472.85	28.09	54.35	54.37	54.38	91.66	92.53	68.56	39.41	31.33	31.33
Movement LOS	F	F	C	D	D	D	F	F	E	D	C	C
d_A, Approach Delay [s/veh]	81.32			54.36			86.46			37.95		
Approach LOS	F			D			F			D		
d_I, Intersection Delay [s/veh]	60.60											
Intersection LOS	E											
Intersection V/C	0.808											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.531			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.73			54.89			51.89			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.703			1.601			2.267			6.029		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1906	0	0	1032	570	716
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1906	0	0	1032	570	716
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	481	0	0	261	144	181
Total Analysis Volume [veh/h]	1925	0	0	1042	576	723
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	50	50	25	25
g / C, Green / Cycle	0.63	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.55	0.30	0.17	0.28
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2192	2217	1066	817
d1, Uniform Delay [s]	12.33	7.85	22.51	25.92
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.40	0.72	0.16	1.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.47	0.54	0.89
d, Delay for Lane Group [s/veh]	17.73	8.56	22.67	27.24
Lane Group LOS	B	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	13.21	4.21	4.29	6.31
50th-Percentile Queue Length [ft/ln]	330.32	105.18	107.23	157.84
95th-Percentile Queue Length [veh/ln]	19.17	7.57	7.69	10.43
95th-Percentile Queue Length [ft/ln]	479.35	189.28	192.14	260.86

Movement, Approach, & Intersection Results

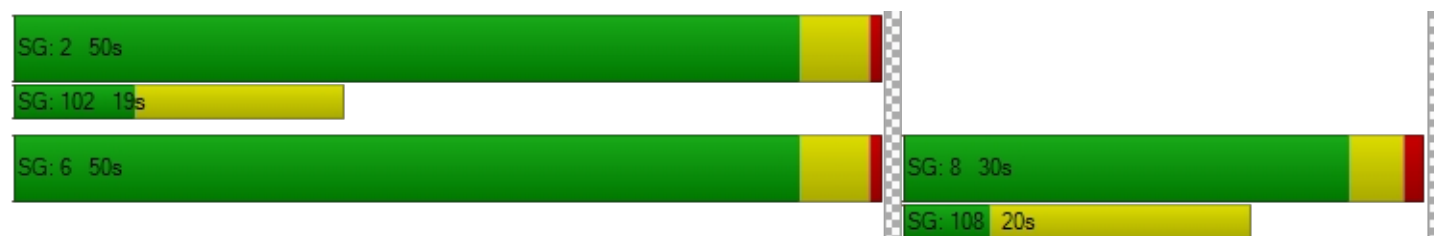
d_M, Delay for Movement [s/veh]	17.73	0.00	0.00	8.56	22.67	27.24
Movement LOS	B			A	C	C
d_A, Approach Delay [s/veh]	17.73		8.56		25.21	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	17.77					
Intersection LOS	B					
Intersection V/C	0.911					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.026	2.441
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.148	2.419	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1000	217	1306	356
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	959	1000	217	1306	356
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	255	54	333	91
Total Analysis Volume [veh/h]	0	979	1020	217	1333	363
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		4		5	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.29	0.39	0.13
s, saturation flow rate [veh/h]	4000	3540	3414	2847
c, Capacity [veh/h]	2123	1785	1410	1176
d1, Uniform Delay [s]	11.63	13.77	22.55	15.75
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	1.33	1.66	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.57	0.95	0.31
d, Delay for Lane Group [s/veh]	12.36	15.10	24.21	15.81
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.94	5.98	11.42	2.12
50th-Percentile Queue Length [ft/ln]	123.58	149.42	285.51	53.00
95th-Percentile Queue Length [veh/ln]	8.59	9.99	16.96	3.82
95th-Percentile Queue Length [ft/ln]	214.74	249.66	424.07	95.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.36	15.10	0.00	24.21	15.81
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	12.36		15.10		22.41	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.73					
Intersection LOS	B					
Intersection V/C	0.744					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	27.17
I_p,int, Pedestrian LOS Score for Intersection	2.798	0.000	2.620
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.79	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.367	2.401	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.679

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	41	1326	7	55	884	193	279	6	4	15	5	388
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	1.30	7.70	0.00	3.70	0.00	1.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	41	1326	7	55	884	193	279	6	4	15	5	329
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	345	2	14	230	50	73	2	1	4	1	86
Total Analysis Volume [veh/h]	43	1381	7	57	921	201	291	6	4	16	5	343
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	93	93	100	91	91	30	30	24	24
g / C, Green / Cycle	0.04	0.58	0.58	0.63	0.57	0.57	0.19	0.19	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.26	0.06	0.31	0.31	0.16	0.01	0.01	0.12
s, saturation flow rate [veh/h]	1761	3549	1859	892	1877	1747	1791	1664	1830	2820
c, Capacity [veh/h]	77	2055	1077	538	1073	998	333	310	272	420
d1, Uniform Delay [s]	74.92	19.05	19.05	14.33	21.22	21.33	63.19	53.24	58.56	65.90
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.33	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.70	1.32	0.03	1.94	2.14	18.24	0.03	0.09	2.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.44	0.44	0.11	0.54	0.55	0.87	0.03	0.08	0.82
d, Delay for Lane Group [s/veh]	79.59	19.74	20.37	14.36	23.16	23.47	81.42	53.27	58.65	68.86
Lane Group LOS	E	B	C	B	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	9.76	10.41	0.42	13.90	13.20	13.32	0.34	0.75	7.03
50th-Percentile Queue Length [ft/ln]	45.88	243.98	260.32	10.42	347.58	330.05	333.00	8.49	18.83	175.82
95th-Percentile Queue Length [veh/ln]	3.30	14.88	15.71	0.75	20.02	19.16	19.31	0.61	1.36	11.38
95th-Percentile Queue Length [ft/ln]	82.58	372.07	392.63	18.76	500.45	479.02	482.64	15.27	33.89	284.55

Movement, Approach, & Intersection Results

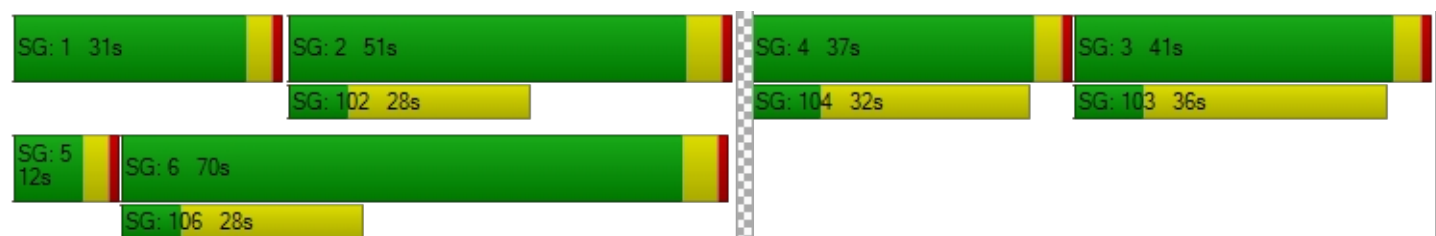
d_M, Delay for Movement [s/veh]	79.59	19.95	20.37	14.36	23.28	23.47	81.42	53.27	53.27	58.65	58.65	68.86
Movement LOS	E	B	C	B	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	21.75			22.88			80.49			68.27		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	32.73											
Intersection LOS	C											
Intersection V/C	0.679											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.006			3.149			2.116			2.539		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.57			28.18			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.347			2.532			2.056			2.258		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 18.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.640

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	59	167	684	93	71	16	2	65	14	279
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	59	167	684	93	71	16	2	65	14	279
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	209	17	47	192	26	20	4	1	18	4	78
Total Analysis Volume [veh/h]	2	837	66	188	769	104	80	18	2	73	16	313
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	35	35	12	50	50	25	25
g / C, Green / Cycle	0.44	0.44	0.15	0.63	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.10	0.24	0.24	0.14	0.24
s, saturation flow rate [veh/h]	1863	1646	1795	1885	1795	738	1642
c, Capacity [veh/h]	860	720	272	1181	1124	314	572
d1, Uniform Delay [s]	17.07	17.10	32.21	7.32	7.33	21.81	24.55
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.31
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	3.54	3.12	0.92	0.98	1.23	4.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.59	0.69	0.38	0.38	0.32	0.70
d, Delay for Lane Group [s/veh]	19.67	20.64	35.32	8.24	8.31	23.04	29.06
Lane Group LOS	B	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.68	6.09	3.55	3.33	3.21	1.59	7.19
50th-Percentile Queue Length [ft/ln]	166.89	152.15	88.68	83.15	80.32	39.68	179.83
95th-Percentile Queue Length [veh/ln]	10.91	10.13	6.38	5.99	5.78	2.86	11.59
95th-Percentile Queue Length [ft/ln]	272.83	253.30	159.62	149.67	144.58	71.43	289.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.67	20.09	20.64	35.32	8.27	8.31	23.04	23.04	23.04	29.06	29.06	29.06
Movement LOS	B	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.13			13.07			23.04			29.06		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	18.66											
Intersection LOS	B											
Intersection V/C	0.640											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.79			29.79			29.79			19.70		
I_p,int, Pedestrian LOS Score for Intersection	2.726			2.928			1.801			2.020		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.71			8.63			17.43			17.40		
I_b,int, Bicycle LOS Score for Intersection	2.306			2.435			1.725			2.223		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.841

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	544	402	303	287	396	453
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	1.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	544	160	303	287	396	26
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	42	79	75	103	7
Total Analysis Volume [veh/h]	567	167	316	299	413	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		8		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	27	52	20	17	17	17
g / C, Green / Cycle	0.35	0.67	0.26	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.32	0.10	0.18	0.16	0.22	0.02
s, saturation flow rate [veh/h]	1795	1595	1795	1870	1885	1542
c, Capacity [veh/h]	628	1075	463	410	413	338
d1, Uniform Delay [s]	23.95	4.57	25.90	28.12	30.25	24.03
k, delay calibration	0.08	0.04	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.92	0.02	1.36	10.84	44.01	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.16	0.68	0.73	1.00	0.08
d, Delay for Lane Group [s/veh]	27.86	4.59	27.26	38.96	74.26	24.49
Lane Group LOS	C	A	C	D	E	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.89	0.77	5.19	6.18	12.41	0.43
50th-Percentile Queue Length [ft/ln]	247.31	19.35	129.69	154.57	310.15	10.63
95th-Percentile Queue Length [veh/ln]	15.05	1.39	8.92	10.26	18.18	0.77
95th-Percentile Queue Length [ft/ln]	376.26	34.83	223.07	256.51	454.56	19.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.86	4.59	27.26	38.96	74.26	24.49
Movement LOS	C	A	C	D	E	C
d_A, Approach Delay [s/veh]	22.57		32.95		71.21	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	38.10					
Intersection LOS	D					
Intersection V/C	0.841					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.64	0.00	44.09
I_p,int, Pedestrian LOS Score for Intersection	2.891	0.000	3.120
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	129	517	517
d_b, Bicycle Delay [s]	33.92	21.38	21.46
I_b,int, Bicycle LOS Score for Intersection	1.560	2.574	2.990
Bicycle LOS	A	B	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	55.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	203	675	39	13	799	382	450	21	174	109	54	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	203	675	39	13	799	382	450	21	159	109	54	40
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	55	181	10	3	215	103	121	6	43	29	15	11
Total Analysis Volume [veh/h]	218	726	42	14	859	411	484	23	171	117	58	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	105	105	4	95	95	28	28	28	16	16
g / C, Green / Cycle	0.08	0.65	0.65	0.02	0.60	0.60	0.17	0.17	0.17	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.21	0.21	0.01	0.36	0.37	0.14	0.14	0.11	0.07	0.06
s, saturation flow rate [veh/h]	1771	1852	1812	1714	1867	1635	1774	1817	1571	1751	1750
c, Capacity [veh/h]	144	1212	1186	41	1115	976	307	315	272	172	172
d1, Uniform Delay [s]	73.44	12.07	12.08	76.76	20.19	20.53	63.64	63.64	61.17	69.62	68.95
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	264.20	0.70	0.72	1.80	2.38	2.92	3.97	3.87	1.78	3.46	2.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.52	0.32	0.32	0.34	0.60	0.62	0.82	0.82	0.63	0.68	0.59
d, Delay for Lane Group [s/veh]	337.63	12.77	12.80	78.56	22.56	23.46	67.62	67.51	62.95	73.08	71.29
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.46	6.25	6.14	0.59	16.12	14.91	10.28	10.51	6.65	4.85	4.12
50th-Percentile Queue Length [ft/ln]	411.54	156.19	153.45	14.72	402.97	372.85	256.90	262.78	166.35	121.32	102.99
95th-Percentile Queue Length [veh/ln]	26.24	10.35	10.20	1.06	22.70	21.25	15.53	15.83	10.88	8.47	7.41
95th-Percentile Queue Length [ft/ln]	656.01	258.68	255.03	26.49	567.57	531.19	388.33	395.71	272.11	211.65	185.37

Movement, Approach, & Intersection Results

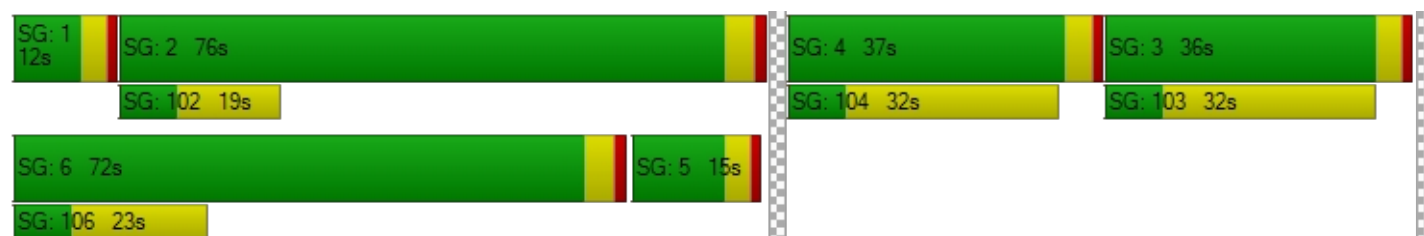
d_M, Delay for Movement [s/veh]	337.63	12.78	12.80	78.56	22.76	23.46	67.56	67.51	62.95	73.08	71.29	71.29
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	84.61			23.59			66.40			72.25		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	55.11											
Intersection LOS	E											
Intersection V/C	0.718											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.887			2.961			2.460			2.048		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.52			26.79			51.24			50.55		
I_b,int, Bicycle LOS Score for Intersection	2.373			2.619			2.703			1.919		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	844	109	2385	90	66	1665
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	844	109	2385	90	66	1665
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	215	28	608	23	17	425
Total Analysis Volume [veh/h]	861	111	2434	92	67	1699
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	5	59
g / C, Green / Cycle	0.26	0.26	0.53	0.53	0.05	0.62
(v / s)_i Volume / Saturation Flow Rate	0.25	0.07	0.48	0.06	0.04	0.34
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	916	427	2676	848	89	3092
d1, Uniform Delay [s]	34.04	27.47	20.22	11.14	44.38	10.29
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.27	0.12	0.53	0.02	4.72	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.26	0.91	0.11	0.75	0.55
d, Delay for Lane Group [s/veh]	36.32	27.59	20.75	11.16	49.10	10.35
Lane Group LOS	D	C	C	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.82	2.00	13.87	0.86	1.61	5.50
50th-Percentile Queue Length [ft/ln]	245.60	49.94	346.85	21.57	40.15	137.57
95th-Percentile Queue Length [veh/ln]	14.96	3.60	19.98	1.55	2.89	9.35
95th-Percentile Queue Length [ft/ln]	374.11	89.90	499.57	38.83	72.27	233.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.32	27.59	20.75	11.16	49.10	10.35
Movement LOS	D	C	C	B	D	B
d_A, Approach Delay [s/veh]	35.32		20.41		11.82	
Approach LOS	D		C		B	
d_I, Intersection Delay [s/veh]	20.28					
Intersection LOS	C					
Intersection V/C	0.847					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.88	36.88	36.88
I_p,int, Pedestrian LOS Score for Intersection	2.363	3.657	3.497
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	529	1058	1058
d_b, Bicycle Delay [s]	25.55	10.47	10.47
I_b,int, Bicycle LOS Score for Intersection	1.560	2.949	2.531
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	73.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.133

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	490	25	336	50	30	344	159	3	32	15	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.0	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	490	25	336	50	30	344	159	3	32	15	114
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	123	6	84	13	8	86	40	1	8	4	29
Total Analysis Volume [veh/h]	0	490	25	336	50	30	344	159	3	32	15	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	19	19	15
g / C, Green / Cycle	0.40	0.40	0.40	0.25	0.25	0.20
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.74	0.21	0.10	0.18
s, saturation flow rate [veh/h]	1598	1526	560	1609	1680	912
c, Capacity [veh/h]	681	605	308	397	415	181
d1, Uniform Delay [s]	16.27	16.50	31.03	27.30	23.75	29.54
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	0.46	177.34	5.99	0.60	13.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.42	1.35	0.87	0.39	0.89
d, Delay for Lane Group [s/veh]	16.63	16.96	208.37	33.29	24.35	43.36
Lane Group LOS	B	B	F	C	C	D
Critical Lane Group	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.09	3.03	20.76	6.32	2.39	3.42
50th-Percentile Queue Length [ft/ln]	77.37	75.68	518.98	157.90	59.66	85.51
95th-Percentile Queue Length [veh/ln]	5.57	5.45	33.43	10.44	4.30	6.16
95th-Percentile Queue Length [ft/ln]	139.27	136.22	835.86	260.94	107.38	153.92

Movement, Approach, & Intersection Results

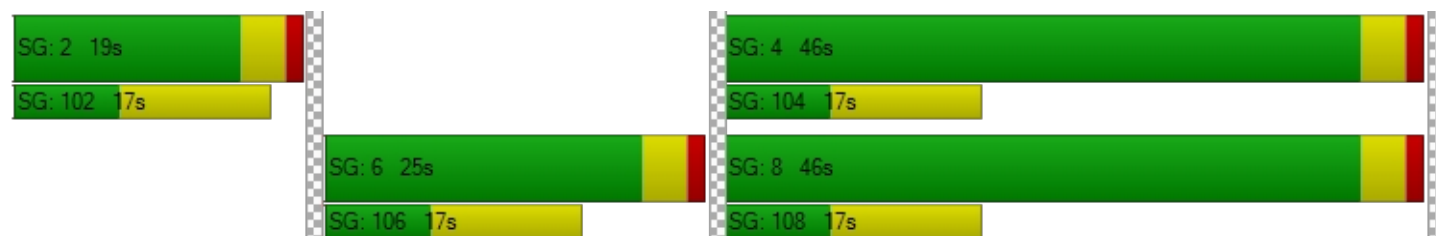
d_M, Delay for Movement [s/veh]	16.63	16.78	16.96	208.37	208.37	208.37	33.29	24.35	24.35	43.36	43.36	43.36
Movement LOS	B	B	B	F	F	F	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	16.79			208.37			30.43			43.36		
Approach LOS	B			F			C			D		
d_I, Intersection Delay [s/veh]	73.66											
Intersection LOS	E											
Intersection V/C	1.133											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	27.55			27.55			27.55			27.55		
I_p,int, Pedestrian LOS Score for Intersection	2.125			2.374			2.110			2.515		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1113			1113			556			397		
d_b, Bicycle Delay [s]	7.43			7.43			19.67			24.24		
I_b,int, Bicycle LOS Score for Intersection	1.984			2.246			2.395			1.825		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Two-way stop	Delay (sec / veh):	20.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.050

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	301	225	55	30	0	0	0	0	15	0	214
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	301	225	55	30	0	0	0	0	15	0	214
Peak Hour Factor	1.000	0.850	0.850	0.850	0.850	1.000	1.000	1.000	1.000	0.850	1.000	0.850
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	89	66	16	9	0	0	0	0	4	0	63
Total Analysis Volume [veh/h]	0	354	265	65	35	0	0	0	0	18	0	252
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.43
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	9.47	0.00	0.00	26.52	16.99	8.47	20.85	20.96	17.10
Movement LOS	A	A	A	A	A	A	D	C	A	C	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.24	0.24	0.00	0.00	0.00	2.62	2.62	2.62
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.04	6.04	6.04	0.00	0.00	0.00	65.54	65.54	65.54
d_A, Approach Delay [s/veh]	0.00			6.15			17.33			17.35		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	5.36											
Intersection LOS	C											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	53	147	0	1	11	34	358	7	76	3	0	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.0	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	147	0	1	11	34	358	7	76	3	0	22
Peak Hour Factor	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	45	0	0	3	10	109	2	23	1	0	7
Total Analysis Volume [veh/h]	65	179	0	1	13	41	437	9	93	4	0	27
Pedestrian Volume [ped/h]	31			0			1			34		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.00	0.00	0.80	0.02	0.10	0.01	0.00	0.03
d_M, Delay for Movement [s/veh]	7.41	0.00	0.00	8.96	0.00	0.00	45.05	45.52	42.19	13.90	12.45	9.70
Movement LOS	A	A	A	A	A	A	E	E	E	B	B	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.13	0.00	0.00	0.00	11.25	11.25	11.25	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	3.26	3.26	3.26	0.08	0.08	0.08	281.34	281.34	281.34	3.38	3.38	3.38
d_A, Approach Delay [s/veh]	1.97			0.16			44.56			10.24		
Approach LOS	A			A			E			B		
d_I, Intersection Delay [s/veh]	28.57											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.064

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	589	441	2340	206	191	1281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	589	441	2340	206	191	1281
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	119	629	55	51	344
Total Analysis Volume [veh/h]	633	474	2516	222	205	1377
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	64	64
g / C, Green / Cycle	0.21	0.21	0.53	0.53	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.21	0.34	0.55	0.16	0.63	0.31
s, saturation flow rate [veh/h]	3025	1389	4544	1421	325	4481
c, Capacity [veh/h]	642	295	2409	753	285	3060
d1, Uniform Delay [s]	37.01	36.95	22.15	12.30	26.18	6.84
k, delay calibration	0.04	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.40	289.31	21.23	0.08	14.48	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	1.61	1.04	0.29	0.72	0.45
d, Delay for Lane Group [s/veh]	44.41	326.25	43.38	12.38	40.65	6.88
Lane Group LOS	D	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.76	30.27	19.25	2.25	2.29	3.15
50th-Percentile Queue Length [ft/ln]	193.91	756.74	481.29	56.14	57.29	78.80
95th-Percentile Queue Length [veh/ln]	12.32	47.93	27.34	4.04	4.12	5.67
95th-Percentile Queue Length [ft/ln]	308.10	1198.18	683.52	101.04	103.12	141.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.41	326.25	43.38	12.38	40.65	6.88
Movement LOS	D	F	F	B	D	A
d_A, Approach Delay [s/veh]	165.09		40.86		11.26	
Approach LOS	F		D		B	
d_I, Intersection Delay [s/veh]	57.57					
Intersection LOS	E					
Intersection V/C	1.064					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.75	36.75	36.75
I_p,int, Pedestrian LOS Score for Intersection	2.865	3.692	3.551
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	425	1061	1061
d_b, Bicycle Delay [s]	29.35	10.38	10.38
I_b,int, Bicycle LOS Score for Intersection	1.560	3.066	2.430
Bicycle LOS	A	C	B

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	171.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.141

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	37	241	20	95	327	47	424	15	290	196	13	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	241	20	95	327	47	424	15	290	196	13	492
Peak Hour Factor	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	68	6	27	93	13	120	4	82	56	4	140
Total Analysis Volume [veh/h]	42	274	23	108	372	53	482	17	330	223	15	559
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	31	0	18	39	0	0	38	38	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	9	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	34	7	36	34	34	39	39
g / C, Green / Cycle	0.04	0.26	0.05	0.28	0.26	0.26	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.03	0.18	0.04	0.27	0.51	0.25	0.33	0.34
s, saturation flow rate [veh/h]	1353	1667	2868	1585	987	1320	960	1442
c, Capacity [veh/h]	51	434	157	440	258	345	289	433
d1, Uniform Delay [s]	62.17	43.29	60.36	46.35	48.04	46.20	45.48	45.48
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.42	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.27	8.49	5.22	35.15	435.08	35.05	76.56	79.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.68	0.69	0.97	1.94	0.96	1.08	1.12
d, Delay for Lane Group [s/veh]	89.44	51.77	65.57	81.50	483.12	81.25	122.04	125.09
Lane Group LOS	F	D	E	F	F	F	F	F
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.77	9.63	1.87	17.76	39.46	13.58	15.37	23.46
50th-Percentile Queue Length [ft/ln]	44.18	240.70	46.72	443.95	986.39	339.46	384.26	586.38
95th-Percentile Queue Length [veh/ln]	3.18	14.72	3.36	24.67	64.24	19.62	22.86	33.65
95th-Percentile Queue Length [ft/ln]	79.53	367.92	84.10	616.73	1606.08	490.55	571.39	841.18

Movement, Approach, & Intersection Results

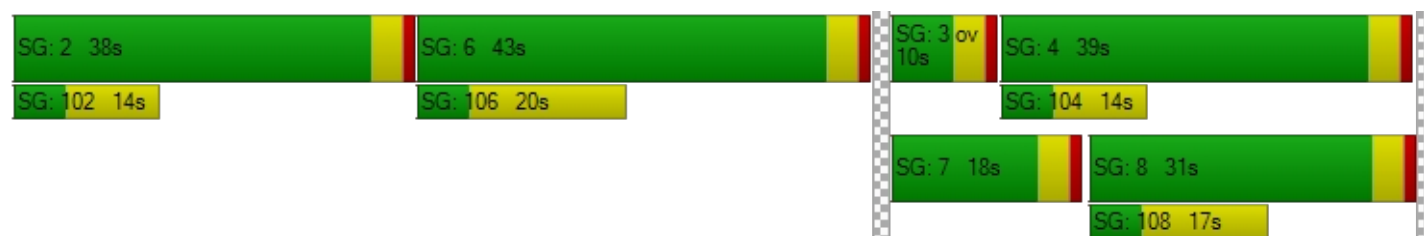
d_M, Delay for Movement [s/veh]	89.44	51.77	51.77	65.57	81.50	81.50	483.12	483.12	81.25	122.04	122.04	124.46
Movement LOS	F	D	D	E	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	56.44			78.28			323.15			123.89		
Approach LOS	E			E			F			F		
d_I, Intersection Delay [s/veh]	171.13											
Intersection LOS	F											
Intersection V/C	1.141											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	56.32			56.32			56.32			56.32		
I_p,int, Pedestrian LOS Score for Intersection	2.370			2.679			2.264			2.380		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	415			538			523			600		
d_b, Bicycle Delay [s]	40.82			34.72			35.46			31.86		
I_b,int, Bicycle LOS Score for Intersection	2.119			2.439			2.927			2.875		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	113.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.073

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	147	108	1112	172	217	133	122	2046	163	583	822	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	147	108	1112	172	217	117	122	2046	57	583	822	34
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	38	28	287	44	56	30	31	527	15	150	212	9
Total Analysis Volume [veh/h]	152	111	1146	177	224	121	126	2109	59	601	847	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	11	15	43	9	13	13	8	40	40	24	56	56
g / C, Green / Cycle	0.11	0.14	0.40	0.08	0.12	0.12	0.07	0.37	0.37	0.22	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.62	0.10	0.14	0.08	0.05	0.42	0.04	0.18	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1484	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	185	206	740	146	200	184	176	1884	543	733	2580	840
d1, Uniform Delay [s]	47.27	43.23	32.19	49.49	47.27	44.80	49.09	33.94	22.24	40.08	14.99	12.70
k, delay calibration	0.11	0.11	0.50	0.42	0.20	0.29	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.70	2.18	253.39	138.12	78.58	10.02	5.34	55.73	0.09	2.34	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.54	1.55	1.21	1.12	0.66	0.72	1.12	0.11	0.82	0.33	0.04
d, Delay for Lane Group [s/veh]	55.97	45.41	285.58	187.61	125.86	54.82	54.43	89.67	22.33	42.41	15.06	12.72
Lane Group LOS	E	D	F	F	F	D	D	F	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	4.35	1.41	23.35	9.57	4.89	3.63	1.79	25.65	0.99	7.75	3.92	0.42
50th-Percentile Queue Length [ft/ln]	108.86	35.24	583.79	239.23	122.26	90.71	44.70	641.29	24.85	193.76	98.12	10.38
95th-Percentile Queue Length [veh/ln]	7.78	2.54	39.04	15.64	8.80	6.53	3.22	36.62	1.79	12.32	7.06	0.75
95th-Percentile Queue Length [ft/ln]	194.42	63.43	976.02	390.93	220.06	163.27	80.46	915.46	44.74	307.90	176.61	18.68

Movement, Approach, & Intersection Results

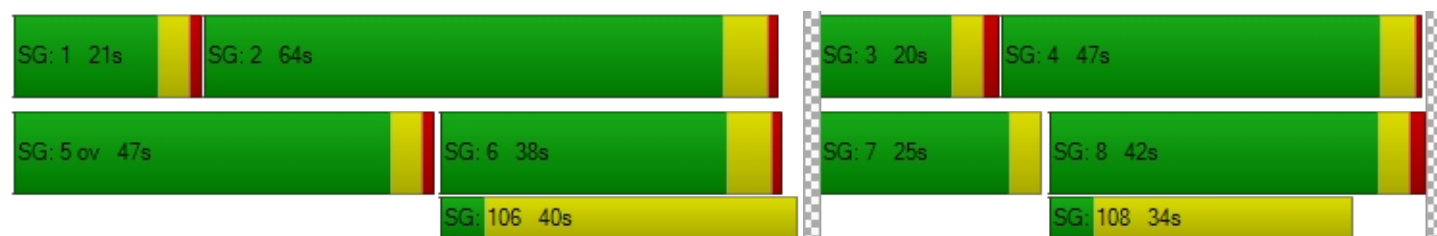
d_M, Delay for Movement [s/veh]	55.97	45.41	285.58	187.61	125.86	54.82	54.43	89.67	22.33	42.41	15.06	12.72
Movement LOS	E	D	F	F	F	D	D	F	C	D	B	B
d_A, Approach Delay [s/veh]	241.89			130.33			86.00			26.09		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	112.97											
Intersection LOS	F											
Intersection V/C	1.073											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.31	0.00	45.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.118	0.000	3.323	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	790	684	593	1075
d_b, Bicycle Delay [s]	19.75	23.38	26.68	11.53
I_b,int, Bicycle LOS Score for Intersection	2.722	2.003	2.880	2.375
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)

Control Type:	Signalized	Delay (sec / veh):	105.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.076

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	71	1861	3390	56	375	978
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	1.50	2.40	16.10	4.90	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	1861	3390	56	375	978
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	475	865	14	96	249
Total Analysis Volume [veh/h]	72	1899	3459	57	383	998
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8		7		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	7		8		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	90	140	50	140
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	15	55	90	90	36	130
g / C, Green / Cycle	0.10	0.36	0.58	0.58	0.23	0.84
(v / s)_i Volume / Saturation Flow Rate	0.02	0.45	0.68	0.04	0.11	0.20
s, saturation flow rate [veh/h]	3264	4237	5077	1399	3378	5020
c, Capacity [veh/h]	316	1513	2952	813	792	4213
d1, Uniform Delay [s]	64.54	49.75	32.39	14.13	51.16	2.50
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	115.18	78.28	0.04	0.17	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.23	1.25	1.17	0.07	0.48	0.24
d, Delay for Lane Group [s/veh]	64.67	164.93	110.67	14.17	51.33	2.53
Lane Group LOS	E	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.32	35.38	54.20	0.84	6.26	1.22
50th-Percentile Queue Length [ft/ln]	32.99	884.62	1354.98	20.96	156.50	30.40
95th-Percentile Queue Length [veh/ln]	2.38	51.94	75.17	1.51	10.36	2.19
95th-Percentile Queue Length [ft/ln]	59.39	1298.40	1879.23	37.73	259.08	54.72

Movement, Approach, & Intersection Results

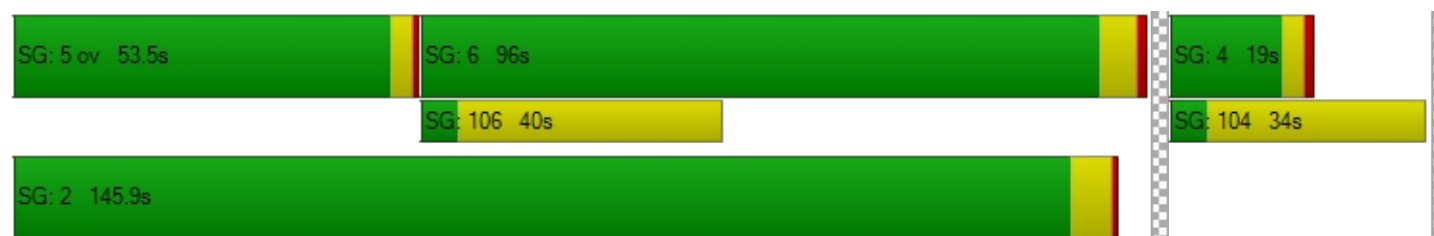
d_M, Delay for Movement [s/veh]	64.67	164.93	110.67	14.17	51.33	2.53
Movement LOS	E	F	F	B	D	A
d_A, Approach Delay [s/veh]	161.27		109.11		16.07	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	105.37					
Intersection LOS	F					
Intersection V/C	1.076					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.61	68.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.013	3.792	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	194	543	569
d_b, Bicycle Delay [s]	63.07	41.05	39.62
I_b,int, Bicycle LOS Score for Intersection	1.670	3.493	2.319
Bicycle LOS	A	C	B

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	441	0	0	87	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	441	0	0	87	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	110	0	0	22	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	441	0	0	87	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.81	12.90	10.84	12.81	12.90	8.71	7.39	0.00	0.00	8.22	0.00	0.00
Movement LOS	B	B	B	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.18			11.47			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	441	87	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	441	87	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	110	22	0
Total Analysis Volume [veh/h]	0	0	0	441	87	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.05	8.71	7.39	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.38		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	506	0	0	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	506	0	0	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	127	0	0	11
Total Analysis Volume [veh/h]	0	0	506	0	0	45
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.27	11.36	0.00	0.00	8.40	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.81		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_AM.vistro

Scenario 20 Near Term (2025) plus Project AM

Report File: P:\...\2025+Proj AM.pdf

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.827	59.2	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.962	31.4	C
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.896	20.0	C
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NB Left	0.736	19.4	B
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.758	23.9	C
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.884	38.0	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.768	40.5	D
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.759	13.8	B
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.488	239.4	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	EB Left	0.184	67.3	F
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.019	336.3	F
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.912	33.9	C
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.652	33.9	C
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	1.008	136.9	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Left	0.770	14.2	B
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.013	12.7	B
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.019	12.1	B

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	NB Right	0.202	17.7	C
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	59.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	162	27	1088	10	30	7	8	344	296	2030	558	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	59	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1088	10	30	7	8	347	296	2089	566	34
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	7	283	3	8	2	2	90	77	544	147	9
Total Analysis Volume [veh/h]	169	28	1133	10	31	7	8	361	308	2176	590	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.27	0.01	0.01	0.12	0.12	0.21	0.43	0.35
s, saturation flow rate [veh/h]	1822	4123	1863	1610	1623	1480	1438	5075	1801
c, Capacity [veh/h]	115	2272	339	293	318	290	282	2532	898
d1, Uniform Delay [s]	74.94	22.17	54.28	54.32	58.69	58.69	63.69	35.17	30.77
k, delay calibration	0.50	0.50	0.04	0.04	0.17	0.17	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	353.45	0.79	0.03	0.04	2.88	3.15	80.52	4.08	4.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.71	0.50	0.07	0.08	0.61	0.61	1.09	0.86	0.70
d, Delay for Lane Group [s/veh]	428.39	22.96	54.31	54.36	61.57	61.84	144.21	39.25	35.21
Lane Group LOS	F	C	D	D	E	E	F	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	16.08	9.04	0.86	0.78	7.45	6.81	17.71	25.55	19.65
50th-Percentile Queue Length [ft/ln]	402.02	225.99	21.43	19.47	186.24	170.34	442.82	638.72	491.22
95th-Percentile Queue Length [veh/ln]	25.96	13.97	1.54	1.40	11.93	11.09	25.79	33.84	26.92
95th-Percentile Queue Length [ft/ln]	649.00	349.27	38.58	35.04	298.15	277.36	644.85	845.96	672.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	428.39	428.39	22.96	54.31	54.34	54.36	61.57	61.70	144.21	39.25	35.21	35.21
Movement LOS	F	F	C	D	D	D	E	E	F	D	D	D
d_A, Approach Delay [s/veh]	83.01			54.33			99.24			38.35		
Approach LOS	F			D			F			D		
d_I, Intersection Delay [s/veh]	59.23											
Intersection LOS	E											
Intersection V/C	0.827											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.511			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.76			54.89			52.34			21.90		
I_b,int, Bicycle LOS Score for Intersection	3.754			1.599			2.118			6.181		
Bicycle LOS	D			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.962

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1644	0	0	858	771	1037
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	0	0	30	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1655	0	0	888	771	1042
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	427	0	0	229	199	269
Total Analysis Volume [veh/h]	1706	0	0	915	795	1074
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.49	0.26	0.23	0.39
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	12.94	8.98	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.89	0.70	0.23	53.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.44	0.66	1.11
d, Delay for Lane Group [s/veh]	16.82	9.68	22.10	79.80
Lane Group LOS	B	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.37	4.02	6.00	15.84
50th-Percentile Queue Length [ft/ln]	284.32	100.43	149.89	396.01
95th-Percentile Queue Length [veh/ln]	16.90	7.23	10.01	23.86
95th-Percentile Queue Length [ft/ln]	422.59	180.78	250.29	596.48

Movement, Approach, & Intersection Results

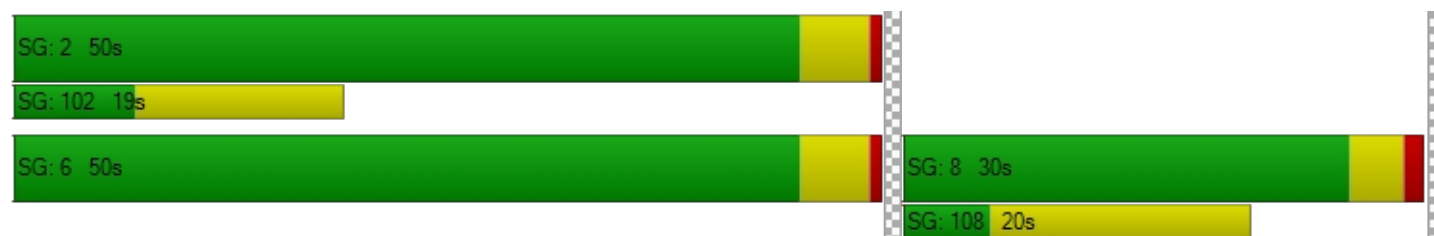
d_M, Delay for Movement [s/veh]	16.82	0.00	0.00	9.68	22.10	79.80
Movement LOS	B			A	C	F
d_A, Approach Delay [s/veh]	16.82		9.68		55.26	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	31.37					
Intersection LOS	C					
Intersection V/C	0.962					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.027	2.580
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	2.967	2.314	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.896

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	935	1471	217	1272	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	11	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	937	1482	217	1281	502
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	239	378	54	327	128
Total Analysis Volume [veh/h]	0	956	1512	217	1307	512
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.43	0.39	0.18
s, saturation flow rate [veh/h]	4000	3515	3373	2782
c, Capacity [veh/h]	2124	1773	1392	1148
d1, Uniform Delay [s]	11.53	17.18	22.46	16.86
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	5.43	1.51	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.85	0.94	0.45
d, Delay for Lane Group [s/veh]	12.23	22.61	23.98	16.96
Lane Group LOS	B	C	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.79	11.79	11.12	3.20
50th-Percentile Queue Length [ft/ln]	119.66	294.73	278.08	80.02
95th-Percentile Queue Length [veh/ln]	8.37	17.42	16.59	5.76
95th-Percentile Queue Length [ft/ln]	209.35	435.50	414.82	144.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.23	22.61	0.00	23.98	16.96
Movement LOS		B	C		C	B
d_A, Approach Delay [s/veh]	12.23		22.61		22.00	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.03					
Intersection LOS	C					
Intersection V/C	0.896					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	27.17
I_p,int, Pedestrian LOS Score for Intersection	2.974	0.000	2.644
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.77	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.348	2.807	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	29	1162	7	448	1250	301	225	19	0	13	4	58
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	1.70	0.00	0.00	0.00	0.00	12.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	1	10	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	29	1164	7	449	1260	301	225	19	0	13	4	0
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	8	323	2	125	350	84	63	5	0	4	1	0
Total Analysis Volume [veh/h]	32	1293	8	499	1400	334	250	21	0	14	4	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	107	107	121	113	113	27	27	6	6
g / C, Green / Cycle	0.04	0.67	0.67	0.76	0.71	0.71	0.17	0.17	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.47	0.47	0.50	0.14	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1758	3532	1849	1069	1840	1723	1785	1900	1829	2572
c, Capacity [veh/h]	63	2364	1238	807	1305	1222	295	314	72	101
d1, Uniform Delay [s]	75.68	11.51	11.51	9.01	12.75	13.58	64.71	56.27	74.49	0.00
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.23	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.43	0.82	3.55	2.68	3.50	13.14	0.07	1.34	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.36	0.36	0.62	0.66	0.71	0.85	0.07	0.25	0.00
d, Delay for Lane Group [s/veh]	80.37	11.94	12.33	12.56	15.43	17.08	77.84	56.33	75.83	0.00
Lane Group LOS	F	B	B	B	B	B	E	E	E	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.38	6.66	7.10	2.88	17.03	18.29	11.08	0.74	0.75	0.00
50th-Percentile Queue Length [ft/ln]	34.41	166.41	177.62	71.99	425.83	457.14	276.93	18.40	18.86	0.00
95th-Percentile Queue Length [veh/ln]	2.48	10.89	11.48	5.18	23.80	25.30	16.54	1.32	1.36	0.00
95th-Percentile Queue Length [ft/ln]	61.94	272.19	286.91	129.59	595.04	632.46	413.39	33.12	33.94	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	80.37	12.08	12.33	12.56	16.06	17.08	77.84	56.33	56.33	75.83	75.83	0.00
Movement LOS	F	B	B	B	B	B	E	E	E	E	E	A
d_A, Approach Delay [s/veh]	13.72			15.43			76.18			75.83		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	19.39											
Intersection LOS	B											
Intersection V/C	0.736											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.067			3.244			2.141			2.993		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.59			28.16			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.293			3.402			2.007			1.687		
Bicycle LOS	B			C			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report Intersection 5: Marsh Rd/Bay Rd

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 23.9
Level Of Service: C
Volume to Capacity (v/c): 0.758

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	810	85	316	755	66	220	66	2	40	21	202
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	811	85	316	761	66	220	66	2	40	21	202
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	207	22	81	194	17	56	17	1	10	5	52
Total Analysis Volume [veh/h]	0	828	87	322	777	67	224	67	2	41	21	206
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			12			9			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	29	29	16	48	48	28	28
g / C, Green / Cycle	0.36	0.36	0.20	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.19	0.24	0.24	0.27	0.16
s, saturation flow rate [veh/h]	1882	1652	1708	1807	1747	1075	1638
c, Capacity [veh/h]	714	588	342	1073	1037	454	623
d1, Uniform Delay [s]	22.44	22.44	31.57	8.67	8.69	24.64	20.46
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.35	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.21	7.71	12.30	1.11	1.16	4.92	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.73	0.94	0.40	0.40	0.64	0.43
d, Delay for Lane Group [s/veh]	27.64	30.15	43.87	9.78	9.84	29.56	21.47
Lane Group LOS	C	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.39	7.73	6.99	3.64	3.56	5.57	3.92
50th-Percentile Queue Length [ft/ln]	209.80	193.15	174.86	91.06	89.12	139.30	98.09
95th-Percentile Queue Length [veh/ln]	13.14	12.28	11.33	6.56	6.42	9.44	7.06
95th-Percentile Queue Length [ft/ln]	328.58	307.11	283.29	163.91	160.41	236.09	176.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.64	28.68	30.15	43.87	9.81	9.84	29.56	29.56	29.56	21.47	21.47	21.47
Movement LOS	C	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	28.82			19.22			29.56			21.47		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	23.92											
Intersection LOS	C											
Intersection V/C	0.758											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.79			29.79			29.79			19.70		
I_p,int, Pedestrian LOS Score for Intersection	2.676			3.163			1.863			2.054		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.70			8.68			17.47			17.41		
I_b,int, Bicycle LOS Score for Intersection	2.314			2.522			2.043			2.002		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	492	286	421	346	271	507
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	3.00	2.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	1	0	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	497	45	421	346	271	81
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	131	12	111	91	71	21
Total Analysis Volume [veh/h]	523	47	443	364	285	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	3		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		23		22	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	26	52	21	17	17	17
g / C, Green / Cycle	0.33	0.67	0.27	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.30	0.03	0.25	0.19	0.15	0.06
s, saturation flow rate [veh/h]	1724	1559	1781	1870	1885	1525
c, Capacity [veh/h]	577	1050	484	411	414	335
d1, Uniform Delay [s]	24.55	4.23	27.28	29.22	27.72	24.86
k, delay calibration	0.08	0.04	0.29	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.36	0.01	16.17	23.30	8.99	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.04	0.91	0.89	0.69	0.25
d, Delay for Lane Group [s/veh]	28.91	4.24	43.45	52.52	36.71	26.67
Lane Group LOS	C	A	D	D	D	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.25	0.20	9.68	8.91	5.68	1.41
50th-Percentile Queue Length [ft/ln]	231.13	5.03	242.09	222.83	141.99	35.28
95th-Percentile Queue Length [veh/ln]	14.23	0.36	14.79	13.81	9.59	2.54
95th-Percentile Queue Length [ft/ln]	355.80	9.06	369.67	345.24	239.71	63.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.91	4.24	43.45	52.52	36.71	26.67
Movement LOS	C	A	D	D	D	C
d_A, Approach Delay [s/veh]	26.87		47.54		34.41	
Approach LOS	C		D		C	
d_I, Intersection Delay [s/veh]	38.02					
Intersection LOS	D					
Intersection V/C	0.884					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.53	0.00	43.97
I_p,int, Pedestrian LOS Score for Intersection	2.896	0.000	3.104
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	130	518	518
d_b, Bicycle Delay [s]	33.77	21.43	21.42
I_b,int, Bicycle LOS Score for Intersection	1.560	2.891	2.875
Bicycle LOS	A	C	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	135	845	84	29	1029	424	581	55	163	35	16	25
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	6	4	1	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	135	846	84	29	1035	428	582	55	148	35	16	25
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	35	218	22	7	267	110	150	14	38	9	4	6
Total Analysis Volume [veh/h]	139	872	87	30	1067	441	600	57	153	36	16	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	99	99	5	92	92	36	36	36	12	12
g / C, Green / Cycle	0.08	0.62	0.62	0.03	0.57	0.57	0.22	0.22	0.22	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.02	0.43	0.44	0.19	0.19	0.10	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1809	1704	1823	1646	1717	1702	1525	1439	1196
c, Capacity [veh/h]	142	1166	1124	58	1048	946	381	378	339	104	86
d1, Uniform Delay [s]	73.29	15.45	15.48	75.88	25.25	25.91	59.93	59.88	53.66	70.60	71.34
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.13	0.12	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	69.46	1.10	1.15	2.58	4.79	6.00	6.98	6.79	0.70	1.47	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.42	0.42	0.51	0.74	0.77	0.87	0.86	0.45	0.35	0.49
d, Delay for Lane Group [s/veh]	142.75	16.55	16.63	78.45	30.04	31.91	66.91	66.67	54.36	72.07	74.48
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.44	9.38	9.12	1.26	22.92	22.20	13.79	13.60	5.48	1.47	1.75
50th-Percentile Queue Length [ft/ln]	210.97	234.49	227.96	31.42	572.95	555.11	344.77	339.95	136.92	36.66	43.85
95th-Percentile Queue Length [veh/ln]	13.20	14.40	14.07	2.26	30.77	29.93	19.88	19.65	9.32	2.64	3.16
95th-Percentile Queue Length [ft/ln]	330.08	360.06	351.77	56.56	769.23	748.31	497.02	491.14	232.88	65.99	78.93

Movement, Approach, & Intersection Results

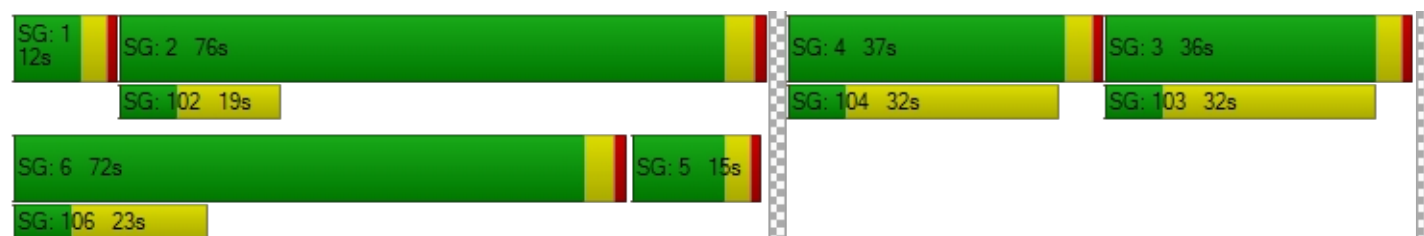
d_M, Delay for Movement [s/veh]	142.75	16.58	16.63	78.45	30.54	31.91	66.80	66.67	54.36	72.07	74.48	74.48
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	32.56			31.87			64.44			73.37		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	40.49											
Intersection LOS	D											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.929			3.056			2.468			2.036		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.465			2.828			2.921			1.688		
Bicycle LOS	B			C			C			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	557	86	1542	300	156	2050
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	67	28	0	3	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	114	1542	303	164	2050
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	161	29	397	78	42	528
Total Analysis Volume [veh/h]	643	118	1590	312	169	2113
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	12	12	18	18	6	28
g / C, Green / Cycle	0.24	0.24	0.35	0.35	0.12	0.55
(v / s)_i Volume / Saturation Flow Rate	0.20	0.08	0.32	0.21	0.09	0.42
s, saturation flow rate [veh/h]	3173	1509	4959	1492	1810	5024
c, Capacity [veh/h]	748	356	1732	521	216	2763
d1, Uniform Delay [s]	18.46	15.97	15.71	13.42	21.57	8.81
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	0.20	0.91	0.41	2.35	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.33	0.92	0.60	0.78	0.76
d, Delay for Lane Group [s/veh]	19.61	16.17	16.62	13.83	23.92	8.98
Lane Group LOS	B	B	B	B	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.35	1.05	4.46	2.23	1.77	3.36
50th-Percentile Queue Length [ft/ln]	83.82	26.15	111.43	55.69	44.25	83.91
95th-Percentile Queue Length [veh/ln]	6.03	1.88	7.92	4.01	3.19	6.04
95th-Percentile Queue Length [ft/ln]	150.87	47.08	197.99	100.25	79.65	151.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.61	16.17	16.62	13.83	23.92	8.98
Movement LOS	B	B	B	B	C	A
d_A, Approach Delay [s/veh]	19.08		16.16		10.09	
Approach LOS	B		B		B	
d_I, Intersection Delay [s/veh]	13.81					
Intersection LOS	B					
Intersection V/C	0.759					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	15.34	15.34	15.34
I_p,int, Pedestrian LOS Score for Intersection	2.350	3.544	3.394
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	994	1989	1989
d_b, Bicycle Delay [s]	6.35	0.00	0.00
I_b,int, Bicycle LOS Score for Intersection	1.560	2.606	2.815
Bicycle LOS	A	B	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	239.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.488

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	266	42	97	291	80	198	349	305	42	58	281
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	17.90	100.0	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	2	0	3	8	69	4	2	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	293	44	97	294	88	267	353	307	43	59	281
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	81	12	27	82	24	74	98	85	12	16	78
Total Analysis Volume [veh/h]	0	326	49	108	327	98	297	392	341	48	66	312
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.61	0.22	0.47	0.41
s, saturation flow rate [veh/h]	1374	1269	878	1357	1568	1031
c, Capacity [veh/h]	440	374	301	400	462	302
d1, Uniform Delay [s]	29.16	29.57	40.61	32.44	35.92	35.99
k, delay calibration	0.11	0.11	0.50	0.26	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	0.98	359.51	6.47	274.77	203.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.49	1.77	0.74	1.59	1.41
d, Delay for Lane Group [s/veh]	29.84	30.56	400.12	38.91	310.69	239.35
Lane Group LOS	C	C	F	D	F	F
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.88	3.74	37.74	7.22	46.41	24.37
50th-Percentile Queue Length [ft/ln]	96.94	93.44	943.46	180.42	1160.28	609.26
95th-Percentile Queue Length [veh/ln]	6.98	6.73	61.19	11.62	72.07	38.62
95th-Percentile Queue Length [ft/ln]	174.49	168.19	1529.73	290.56	1801.66	965.51

Movement, Approach, & Intersection Results

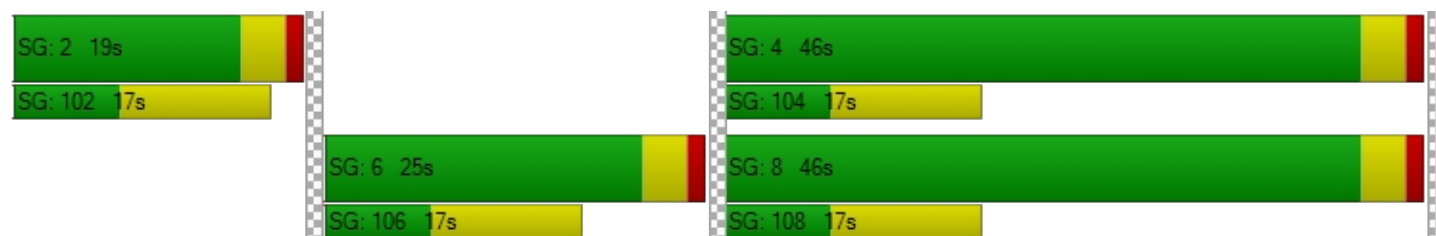
d_M, Delay for Movement [s/veh]	29.84	30.13	30.56	400.12	400.12	400.12	38.91	310.69	310.69	239.35	239.35	239.35
Movement LOS	C	C	C	F	F	F	D	F	F	F	F	F
d_A, Approach Delay [s/veh]	30.19			400.12			232.32			239.35		
Approach LOS	C			F			F			F		
d_I, Intersection Delay [s/veh]	239.36											
Intersection LOS	F											
Intersection V/C	1.488											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	40.55			40.55			40.55			40.55		
I_p,int, Pedestrian LOS Score for Intersection	2.301			2.423			2.334			2.350		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	824			824			412			294		
d_b, Bicycle Delay [s]	17.61			17.61			32.12			37.06		
I_b,int, Bicycle LOS Score for Intersection	1.869			2.439			3.259			2.263		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway

Control Type:	Two-way stop	Delay (sec / veh):	67.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.184

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⬆			⬆			⬆			⬆		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	153	113	304	334	0	0	0	0	44	0	155
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	0	0	1	4	13	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	169	113	304	335	4	13	0	0	44	0	155
Peak Hour Factor	1.000	0.910	0.910	0.910	0.910	1.000	1.000	1.000	1.000	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	46	31	84	92	1	3	0	0	12	0	43
Total Analysis Volume [veh/h]	0	186	124	334	368	4	13	0	0	48	0	170
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.27	0.00	0.00	0.18	0.00	0.00	0.46	0.00	0.23
d_M, Delay for Movement [s/veh]	8.03	0.00	0.00	8.94	0.00	0.00	67.29	52.26	21.54	60.25	59.22	30.83
Movement LOS	A	A	A	A	A	A	F	F	C	F	F	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	1.09	1.09	1.09	0.62	0.62	0.62	4.70	4.70	4.70
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	27.19	27.19	27.19	15.61	15.61	15.61	117.41	117.41	117.41
d_A, Approach Delay [s/veh]	0.00			4.23			67.29			37.31		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	9.62											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	336.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	70	52	0	35	155	188	211	3	33	1	0	3
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.0	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	52	0	35	155	189	227	3	33	1	0	3
Peak Hour Factor	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	24	18	0	12	54	66	79	1	11	0	0	1
Total Analysis Volume [veh/h]	97	72	0	49	215	263	315	4	46	1	0	4
Pedestrian Volume [ped/h]	70			0			137			17		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.00	0.00	0.05	0.00	0.00	1.49	0.02	0.11	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	9.80	0.00	0.00	8.61	0.00	0.00	335.86	336.29	327.20	23.29	25.89	8.82
Movement LOS	A	A	A	A	A	A	F	F	F	C	D	A
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.39	0.15	0.15	0.15	23.26	23.26	23.26	0.03	0.03	0.03
95th-Percentile Queue Length [ft/ln]	9.66	9.66	9.66	3.68	3.68	3.68	581.62	581.62	581.62	0.70	0.70	0.70
d_A, Approach Delay [s/veh]	5.62			0.80			334.77			11.71		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	115.97											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	176	275	1564	528	486	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	28	0	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	275	1592	528	486	1971
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	72	419	139	128	519
Total Analysis Volume [veh/h]	185	289	1676	556	512	2075
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	41	41	70	70
g / C, Green / Cycle	0.20	0.20	0.41	0.41	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.37	0.40	0.75	0.46
s, saturation flow rate [veh/h]	3078	1188	4470	1393	687	4518
c, Capacity [veh/h]	614	237	1842	574	533	3172
d1, Uniform Delay [s]	34.21	40.16	27.75	28.88	30.53	8.24
k, delay calibration	0.04	0.50	0.04	0.26	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	130.91	0.78	20.62	30.48	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	1.22	0.91	0.97	0.96	0.65
d, Delay for Lane Group [s/veh]	34.32	171.07	28.53	49.50	61.01	8.33
Lane Group LOS	C	F	C	D	E	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.92	14.36	11.39	14.94	8.14	6.09
50th-Percentile Queue Length [ft/ln]	47.98	358.91	284.75	373.60	203.43	152.22
95th-Percentile Queue Length [veh/ln]	3.45	22.60	16.93	21.28	12.82	10.14
95th-Percentile Queue Length [ft/ln]	86.36	564.98	423.13	532.09	320.39	253.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.32	171.07	28.53	49.50	61.01	8.33
Movement LOS	C	F	C	D	E	A
d_A, Approach Delay [s/veh]	117.70		33.75		18.75	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	33.94					
Intersection LOS	C					
Intersection V/C	0.912					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.74	39.74	39.74
I_p,int, Pedestrian LOS Score for Intersection	3.023	3.643	3.550
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	399	997	997
d_b, Bicycle Delay [s]	32.13	12.60	12.60
I_b,int, Bicycle LOS Score for Intersection	1.560	2.787	2.982
Bicycle LOS	A	C	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	110	257	142	556	204	423	87	7	105	30	17	61
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	0	0	0	0	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	257	142	556	204	423	87	7	110	30	17	61
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	29	66	36	142	52	108	22	2	28	8	4	16
Total Analysis Volume [veh/h]	114	262	145	567	208	432	89	7	112	31	17	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	37	0	20	37	0	0	24	24	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	9	43	21	55	12	37	8	8
g / C, Green / Cycle	0.09	0.43	0.21	0.55	0.12	0.37	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.07	0.29	0.18	0.43	0.09	0.10	0.06	0.04
s, saturation flow rate [veh/h]	1572	1416	3105	1487	1118	1094	846	1372
c, Capacity [veh/h]	145	613	662	824	131	400	123	104
d1, Uniform Delay [s]	44.40	22.54	37.86	17.45	42.60	22.35	45.49	44.71
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.89	5.58	3.32	7.10	7.55	0.38	2.03	5.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.66	0.86	0.78	0.73	0.28	0.39	0.59
d, Delay for Lane Group [s/veh]	53.30	28.12	41.17	24.55	50.15	22.73	47.53	49.98
Lane Group LOS	D	C	D	C	D	C	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.10	8.30	6.88	12.31	2.55	1.87	1.24	1.62
50th-Percentile Queue Length [ft/ln]	77.59	207.56	172.11	307.81	63.68	46.87	31.10	40.48
95th-Percentile Queue Length [veh/ln]	5.59	13.03	11.19	18.07	4.58	3.37	2.24	2.91
95th-Percentile Queue Length [ft/ln]	139.66	325.70	279.69	451.67	114.62	84.36	55.98	72.87

Movement, Approach, & Intersection Results

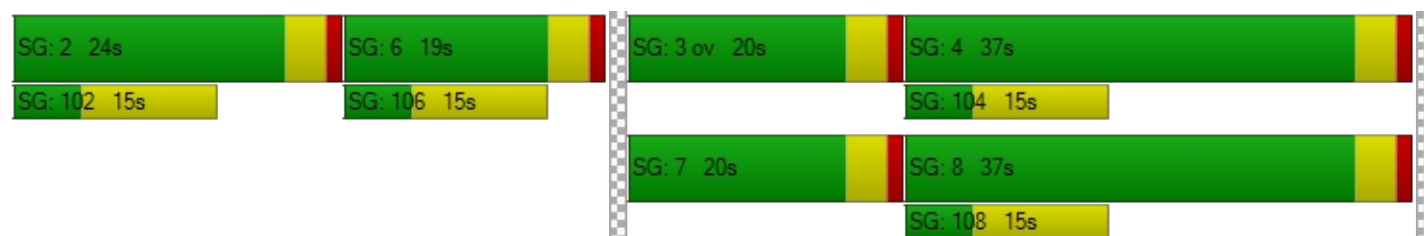
d_M, Delay for Movement [s/veh]	53.30	28.12	28.12	41.17	24.55	24.55	50.15	50.15	22.73	47.53	47.53	49.75
Movement LOS	D	C	C	D	C	C	D	D	C	D	D	D
d_A, Approach Delay [s/veh]	33.63			32.36			35.38			48.90		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.88											
Intersection LOS	C											
Intersection V/C	0.652											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	41.41			41.41			41.41			41.41		
I_p,int, Pedestrian LOS Score for Intersection	2.274			2.622			2.197			2.340		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	660			660			400			300		
d_b, Bicycle Delay [s]	22.45			22.45			32.00			36.13		
I_b,int, Bicycle LOS Score for Intersection	2.419			3.551			1.903			1.741		
Bicycle LOS	B			D			A			A		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	136.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.008

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	210	456	277	42	93	79	382	459	172	1167	2217	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	0	19	9	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	213	456	277	42	93	63	382	478	75	1167	2222	72
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	54	116	71	11	24	16	97	122	19	298	567	18
Total Analysis Volume [veh/h]	217	465	283	43	95	64	390	488	77	1191	2267	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	16	16	45	9	9	9	15	40	40	25	50	50
g / C, Green / Cycle	0.15	0.14	0.41	0.08	0.08	0.08	0.14	0.37	0.37	0.23	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.13	0.30	0.16	0.03	0.08	0.06	0.12	0.10	0.05	0.36	0.45	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1078	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	248	223	722	104	100	88	474	1805	535	755	2277	733
d1, Uniform Delay [s]	45.87	47.26	22.91	48.11	50.37	49.35	46.09	24.54	23.34	42.62	30.01	17.24
k, delay calibration	0.20	0.45	0.11	0.11	0.11	0.14	0.11	0.11	0.11	0.28	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.79	501.44	0.35	2.61	30.14	13.63	3.66	0.08	0.12	263.66	7.82	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	2.08	0.39	0.41	0.95	0.73	0.82	0.27	0.14	1.58	1.00	0.10
d, Delay for Lane Group [s/veh]	61.66	548.70	23.26	50.72	80.50	62.97	49.75	24.62	23.47	306.27	37.83	17.30
Lane Group LOS	E	F	C	D	F	E	D	C	C	F	D	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.75	18.52	1.68	1.22	1.74	2.08	5.41	2.99	1.36	37.77	20.67	1.07
50th-Percentile Queue Length [ft/ln]	168.74	463.00	41.95	30.42	43.52	51.92	135.14	74.78	33.97	944.14	516.80	26.69
95th-Percentile Queue Length [veh/ln]	11.01	31.40	3.02	2.19	3.13	3.74	9.22	5.38	2.45	58.56	28.13	1.92
95th-Percentile Queue Length [ft/ln]	275.26	784.96	75.52	54.76	78.33	93.45	230.46	134.60	61.14	1464.12	703.22	48.04

Movement, Approach, & Intersection Results

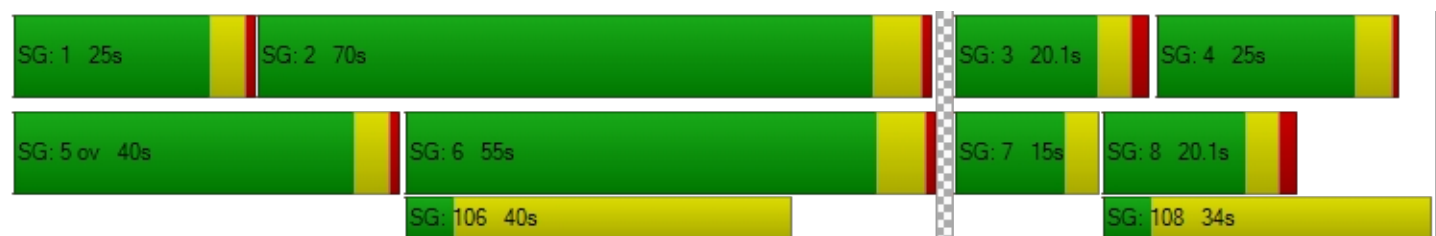
d_M, Delay for Movement [s/veh]	61.66	548.70	23.26	50.72	80.50	62.97	49.75	24.62	23.47	306.27	37.83	17.30
Movement LOS	E	F	C	D	F	E	D	C	C	F	D	B
d_A, Approach Delay [s/veh]	285.09			68.61			34.79			127.95		
Approach LOS	F			E			C			F		
d_I, Intersection Delay [s/veh]	136.92											
Intersection LOS	F											
Intersection V/C	1.008											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.41	0.00	46.41	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.121	0.000	3.327	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	374	273	890	1163
d_b, Bicycle Delay [s]	36.37	41.07	16.95	9.65
I_b,int, Bicycle LOS Score for Intersection	2.356	1.739	2.143	3.502
Bicycle LOS	B	A	B	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	336	416	831	88	1219	2768
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	3.60	5.40	3.50	1.60	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	15	4	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	416	846	92	1219	2772
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	107	218	24	314	714
Total Analysis Volume [veh/h]	347	429	872	95	1257	2858
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	7		6		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	6		7		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	35	110	75	110
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	74	74	74	74	74	74
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	10	44	20	20	30	54
g / C, Green / Cycle	0.14	0.60	0.27	0.27	0.41	0.73
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.18	0.06	0.36	0.57
s, saturation flow rate [veh/h]	3453	4166	4955	1548	3470	5049
c, Capacity [veh/h]	475	2491	1361	425	1411	3683
d1, Uniform Delay [s]	30.80	6.71	23.78	20.86	20.56	6.28
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	0.01	0.61	0.32	0.82	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.17	0.64	0.22	0.89	0.78
d, Delay for Lane Group [s/veh]	31.62	6.73	24.40	21.18	21.39	6.72
Lane Group LOS	C	A	C	C	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.89	0.83	3.95	1.15	8.29	3.60
50th-Percentile Queue Length [ft/ln]	72.29	20.80	98.68	28.67	207.16	89.98
95th-Percentile Queue Length [veh/ln]	5.20	1.50	7.10	2.06	13.01	6.48
95th-Percentile Queue Length [ft/ln]	130.12	37.44	177.62	51.61	325.18	161.97

Movement, Approach, & Intersection Results

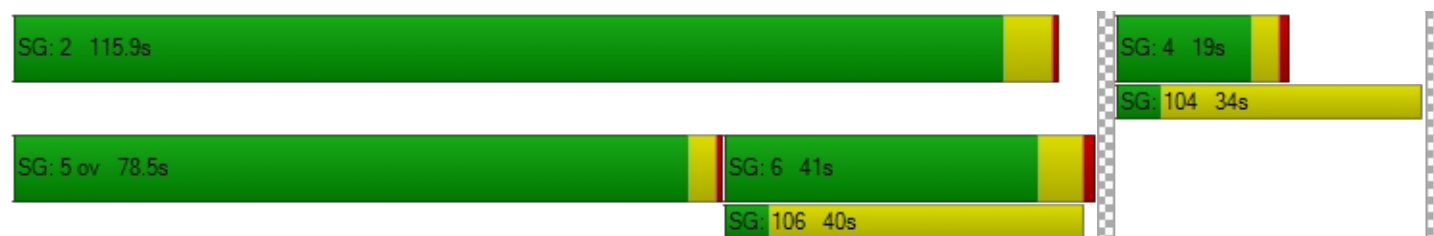
d_M, Delay for Movement [s/veh]	31.62	6.73	24.40	21.18	21.39	6.72
Movement LOS	C	A	C	C	C	A
d_A, Approach Delay [s/veh]	17.86		24.08		11.20	
Approach LOS	B		C		B	
d_I, Intersection Delay [s/veh]	14.21					
Intersection LOS	B					
Intersection V/C	0.770					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.74	28.74	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.932	3.651	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	403	941	376
d_b, Bicycle Delay [s]	23.71	10.43	24.53
I_b,int, Bicycle LOS Score for Intersection	1.670	2.091	3.823
Bicycle LOS	A	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.013

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	247	0	0	259	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	6	0	0	1	2	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	6	0	0	1	249	0	0	259	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	2	0	0	0	62	0	0	65	0
Total Analysis Volume [veh/h]	0	0	0	6	0	0	1	249	0	0	259	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.60	12.72	9.56	12.70	12.82	9.72	7.76	0.00	0.00	7.73	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.96	0.96	0.96	0.06	0.06	0.06	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.63			12.70			0.03			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.16											
Intersection LOS	B											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.019

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	247	259	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	0	2	6	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	2	253	259	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	1	63	65	0
Total Analysis Volume [veh/h]	10	0	2	253	259	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.09	9.76	7.76	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.06	0.06	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.48	1.48	0.12	0.12	0.00	0.00
d_A, Approach Delay [s/veh]	12.09		0.06		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.26					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.202

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	852	0	0	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	72	2	12	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	72	854	12	9	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	214	3	2	35
Total Analysis Volume [veh/h]	0	72	854	12	9	138
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.20	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	21.38	17.68	0.00	0.00	9.69	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.75	0.75	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	18.65	18.65	0.00	0.00	0.88	0.88
d_A, Approach Delay [s/veh]	17.68		0.00		0.59	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.25					
Intersection LOS	C					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_PM.vistro

Scenario 20 Near Term (2025) plus Project PM

Report File: P:\...\2025+Proj PM.pdf

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.818	61.8	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.929	18.7	B
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.754	18.1	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	EB Left	0.682	32.8	C
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.642	18.7	B
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	WB Thru	0.844	38.3	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.721	55.1	E
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.874	22.5	C
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Left	1.255	104.2	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	EB Left	0.050	28.9	D
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.018	50.9	F
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.068	58.7	E
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	EB Left	1.279	163.0	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Right	1.076	114.3	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Right	1.078	105.8	F
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.009	13.1	B
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.014	12.4	B

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	NB Right	0.069	12.0	B
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	61.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	179	40	1610	12	31	5	9	607	208	2131	455	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	0	0	7	0	34	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1611	12	31	5	9	614	208	2165	459	14
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	47	10	420	3	8	1	2	160	54	564	120	4
Total Analysis Volume [veh/h]	186	42	1678	13	32	5	9	640	217	2255	478	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	11	93	29	29	31	31	31	80	80
g / C, Green / Cycle	0.07	0.58	0.18	0.18	0.19	0.19	0.19	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.12	0.40	0.01	0.01	0.18	0.18	0.14	0.44	0.29
s, saturation flow rate [veh/h]	1826	4190	1854	1633	1891	1724	1553	5150	1675
c, Capacity [veh/h]	123	2328	337	297	363	331	298	2571	836
d1, Uniform Delay [s]	74.63	26.35	54.31	54.34	63.68	63.68	60.52	35.70	28.44
k, delay calibration	0.50	0.50	0.04	0.04	0.40	0.40	0.25	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	416.73	1.97	0.04	0.04	28.82	30.65	7.53	4.62	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.86	0.72	0.08	0.08	0.94	0.94	0.73	0.88	0.59
d, Delay for Lane Group [s/veh]	491.35	28.32	54.35	54.38	92.50	94.33	68.05	40.32	31.49
Lane Group LOS	F	C	D	D	F	F	E	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.26	16.16	0.89	0.81	16.58	15.27	8.93	26.98	14.23
50th-Percentile Queue Length [ft/ln]	481.40	404.01	22.32	20.31	414.41	381.81	223.17	674.57	355.80
95th-Percentile Queue Length [veh/ln]	30.82	22.75	1.61	1.46	23.25	21.68	13.83	35.50	20.42
95th-Percentile Queue Length [ft/ln]	770.61	568.83	40.18	36.55	581.33	542.04	345.67	887.54	510.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	491.35	491.35	28.32	54.35	54.37	54.38	92.50	93.38	68.05	40.32	31.49	31.49
Movement LOS	F	F	C	D	D	D	F	F	E	D	C	C
d_A, Approach Delay [s/veh]	83.71			54.36			87.03			38.73		
Approach LOS	F			D			F			D		
d_I, Intersection Delay [s/veh]	61.77											
Intersection LOS	E											
Intersection V/C	0.818											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.534			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.73			54.89			51.89			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.705			1.601			2.274			6.094		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.929

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↵↵↵↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1906	0	0	1032	570	716
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	33	0	0	20	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1939	0	0	1052	570	734
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	490	0	0	266	144	185
Total Analysis Volume [veh/h]	1959	0	0	1063	576	741
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	50	50	26	26
g / C, Green / Cycle	0.62	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.56	0.30	0.17	0.29
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2169	2193	1088	834
d1, Uniform Delay [s]	13.05	8.20	22.08	25.67
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.72	0.77	0.15	1.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.48	0.53	0.89
d, Delay for Lane Group [s/veh]	19.77	8.96	22.23	27.01
Lane Group LOS	B	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.39	4.45	4.24	6.46
50th-Percentile Queue Length [ft/ln]	359.64	111.17	105.93	161.45
95th-Percentile Queue Length [veh/ln]	20.61	7.91	7.61	10.63
95th-Percentile Queue Length [ft/ln]	515.14	197.63	190.33	265.64

Movement, Approach, & Intersection Results

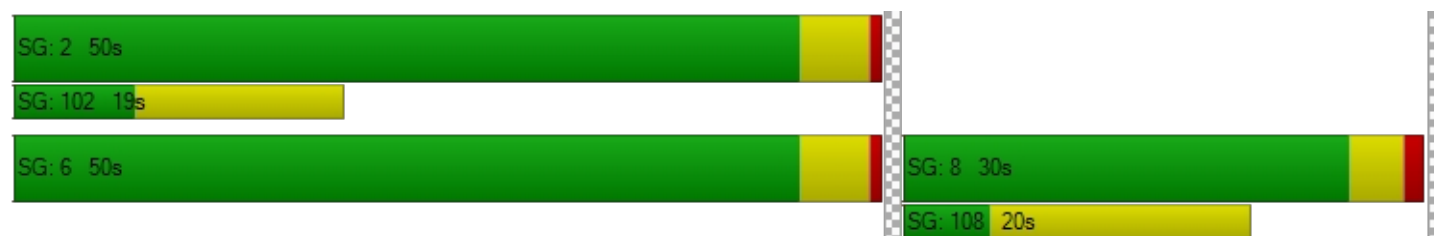
d_M, Delay for Movement [s/veh]	19.77	0.00	0.00	8.96	22.23	27.01
Movement LOS	B			A	C	C
d_A, Approach Delay [s/veh]	19.77		8.96		24.92	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	18.69					
Intersection LOS	B					
Intersection V/C	0.929					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.044	2.445
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.176	2.437	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1000	217	1306	356
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	8	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	968	1008	217	1330	356
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	247	257	54	339	91
Total Analysis Volume [veh/h]	0	988	1029	217	1357	363
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		4		5	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.25	0.29	0.40	0.13
s, saturation flow rate [veh/h]	4000	3540	3414	2847
c, Capacity [veh/h]	2123	1786	1410	1176
d1, Uniform Delay [s]	11.69	13.83	22.84	15.77
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	1.36	2.29	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.58	0.96	0.31
d, Delay for Lane Group [s/veh]	12.42	15.20	25.13	15.83
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.01	6.06	11.89	2.12
50th-Percentile Queue Length [ft/ln]	125.24	151.48	297.15	53.04
95th-Percentile Queue Length [veh/ln]	8.68	10.10	17.54	3.82
95th-Percentile Queue Length [ft/ln]	217.01	252.41	438.50	95.47

Movement, Approach, & Intersection Results

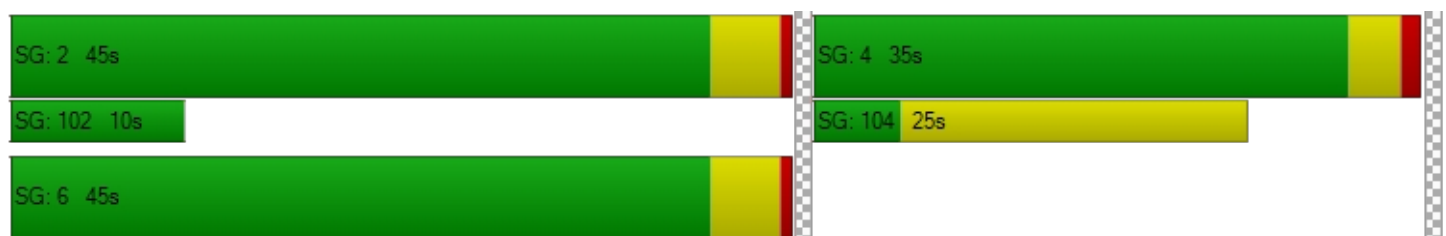
d_M, Delay for Movement [s/veh]	0.00	12.42	15.20	0.00	25.13	15.83
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	12.42		15.20		23.17	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.13					
Intersection LOS	B					
Intersection V/C	0.754					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	2.804	0.000	2.625
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.375	2.409	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	41	1326	7	55	884	193	279	6	4	15	5	388
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	1.30	7.70	0.00	3.70	0.00	1.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	0	1	7	0	0	0	0	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	41	1334	7	56	891	193	279	6	4	15	5	330
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	347	2	15	232	50	73	2	1	4	1	86
Total Analysis Volume [veh/h]	43	1390	7	58	928	201	291	6	4	16	5	344
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	92	92	100	91	91	30	30	24	24
g / C, Green / Cycle	0.04	0.58	0.58	0.63	0.57	0.57	0.19	0.19	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.26	0.07	0.31	0.31	0.16	0.01	0.01	0.12
s, saturation flow rate [veh/h]	1761	3549	1859	887	1877	1748	1791	1664	1830	2820
c, Capacity [veh/h]	77	2054	1076	534	1072	998	333	310	273	421
d1, Uniform Delay [s]	74.92	19.13	19.13	14.39	21.31	21.43	63.19	53.24	58.51	65.87
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.33	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.70	1.34	0.03	1.97	2.17	18.24	0.03	0.09	2.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.45	0.45	0.11	0.54	0.55	0.87	0.03	0.08	0.82
d, Delay for Lane Group [s/veh]	79.59	19.83	20.47	14.43	23.28	23.60	81.42	53.27	58.60	68.84
Lane Group LOS	E	B	C	B	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	9.86	10.52	0.42	14.04	13.34	13.32	0.34	0.75	7.05
50th-Percentile Queue Length [ft/ln]	45.88	246.44	262.96	10.62	350.98	333.53	333.00	8.49	18.82	176.33
95th-Percentile Queue Length [veh/ln]	3.30	15.01	15.84	0.76	20.18	19.33	19.31	0.61	1.35	11.41
95th-Percentile Queue Length [ft/ln]	82.58	375.17	395.94	19.12	504.61	483.28	482.64	15.27	33.87	285.21

Movement, Approach, & Intersection Results

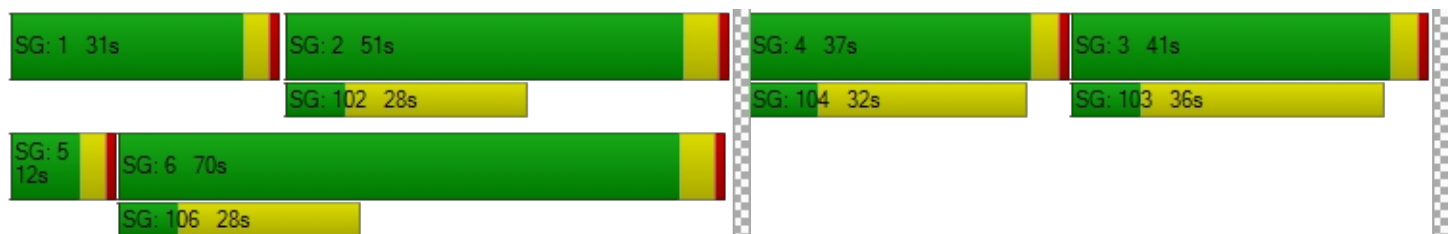
d_M, Delay for Movement [s/veh]	79.59	20.05	20.47	14.43	23.40	23.60	81.42	53.27	53.27	58.60	58.60	68.84
Movement LOS	E	C	C	B	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	21.83			23.00			80.49			68.25		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	32.76											
Intersection LOS	C											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.009			3.152			2.116			2.540		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.57			28.18			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.352			2.539			2.056			2.259		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 18.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.642

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	59	167	684	93	71	16	2	65	14	279
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	4	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	750	59	167	688	93	71	16	2	65	14	279
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	211	17	47	193	26	20	4	1	18	4	78
Total Analysis Volume [veh/h]	2	843	66	188	773	104	80	18	2	73	16	313
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	35	35	12	50	50	25	25
g / C, Green / Cycle	0.44	0.44	0.15	0.63	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.10	0.24	0.24	0.14	0.24
s, saturation flow rate [veh/h]	1863	1646	1795	1885	1795	738	1642
c, Capacity [veh/h]	860	720	272	1181	1125	314	572
d1, Uniform Delay [s]	17.11	17.14	32.21	7.33	7.34	21.81	24.55
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.31
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.64	3.59	3.12	0.93	0.98	1.23	4.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.59	0.69	0.38	0.38	0.32	0.70
d, Delay for Lane Group [s/veh]	19.75	20.73	35.32	8.25	8.33	23.04	29.06
Lane Group LOS	B	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.74	6.15	3.55	3.35	3.23	1.59	7.19
50th-Percentile Queue Length [ft/ln]	168.46	153.64	88.68	83.65	80.82	39.68	179.83
95th-Percentile Queue Length [veh/ln]	11.00	10.21	6.38	6.02	5.82	2.86	11.59
95th-Percentile Queue Length [ft/ln]	274.89	255.28	159.62	150.57	145.47	71.43	289.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.75	20.17	20.73	35.32	8.29	8.33	23.04	23.04	23.04	29.06	29.06	29.06
Movement LOS	B	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.21			13.06			23.04			29.06		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	18.69											
Intersection LOS	B											
Intersection V/C	0.642											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.79			29.79			29.79			19.70		
I_p,int, Pedestrian LOS Score for Intersection	2.729			2.931			1.801			2.020		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.71			8.63			17.43			17.40		
I_b,int, Bicycle LOS Score for Intersection	2.311			2.438			1.725			2.223		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.844

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	544	402	303	287	396	453
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	1.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	1	1	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	547	161	304	287	396	30
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	42	79	75	103	8
Total Analysis Volume [veh/h]	570	168	317	299	413	31
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		8		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	27	52	20	17	17	17
g / C, Green / Cycle	0.35	0.68	0.26	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.32	0.11	0.18	0.16	0.22	0.02
s, saturation flow rate [veh/h]	1795	1595	1795	1870	1885	1542
c, Capacity [veh/h]	631	1077	462	409	412	337
d1, Uniform Delay [s]	23.94	4.56	26.02	28.22	30.35	24.18
k, delay calibration	0.08	0.04	0.09	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.92	0.02	1.43	10.96	44.68	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.16	0.69	0.73	1.00	0.09
d, Delay for Lane Group [s/veh]	27.87	4.59	27.46	39.18	75.04	24.72
Lane Group LOS	C	A	C	D	F	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.97	0.78	5.24	6.21	12.48	0.49
50th-Percentile Queue Length [ft/ln]	249.21	19.48	130.91	155.28	312.12	12.29
95th-Percentile Queue Length [veh/ln]	15.15	1.40	8.99	10.30	18.29	0.89
95th-Percentile Queue Length [ft/ln]	378.66	35.06	224.74	257.47	457.36	22.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.87	4.59	27.46	39.18	75.04	24.72
Movement LOS	C	A	C	D	F	C
d_A, Approach Delay [s/veh]	22.57		33.15		71.52	
Approach LOS	C		C		E	
d_I, Intersection Delay [s/veh]	38.28					
Intersection LOS	D					
Intersection V/C	0.844					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.74	0.00	44.18
I_p,int, Pedestrian LOS Score for Intersection	2.894	0.000	3.122
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	129	515	515
d_b, Bicycle Delay [s]	34.02	21.47	21.55
I_b,int, Bicycle LOS Score for Intersection	1.560	2.576	2.997
Bicycle LOS	A	B	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	55.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	203	675	39	13	799	382	450	21	174	109	54	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	4	3	3	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	203	680	39	13	803	385	453	21	159	109	54	40
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	55	183	10	3	216	103	122	6	43	29	15	11
Total Analysis Volume [veh/h]	218	731	42	14	863	414	487	23	171	117	58	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	104	104	4	95	95	28	28	28	16	16
g / C, Green / Cycle	0.08	0.65	0.65	0.02	0.60	0.60	0.17	0.17	0.17	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.21	0.21	0.01	0.36	0.37	0.14	0.14	0.11	0.07	0.06
s, saturation flow rate [veh/h]	1771	1852	1812	1714	1867	1635	1774	1817	1571	1751	1750
c, Capacity [veh/h]	144	1210	1184	41	1113	975	308	316	273	172	172
d1, Uniform Delay [s]	73.44	12.15	12.16	76.76	20.33	20.69	63.58	63.58	61.05	69.62	68.95
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	264.20	0.71	0.72	1.80	2.42	2.98	3.98	3.88	1.75	3.46	2.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.52	0.32	0.32	0.34	0.60	0.62	0.82	0.82	0.63	0.68	0.59
d, Delay for Lane Group [s/veh]	337.63	12.86	12.88	78.56	22.75	23.67	67.57	67.46	62.80	73.08	71.29
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.46	6.32	6.21	0.59	16.30	15.09	10.34	10.57	6.65	4.85	4.12
50th-Percentile Queue Length [ft/ln]	411.54	157.93	155.17	14.72	407.41	377.31	258.41	264.32	166.14	121.32	102.99
95th-Percentile Queue Length [veh/ln]	26.24	10.44	10.29	1.06	22.92	21.46	15.61	15.91	10.87	8.47	7.41
95th-Percentile Queue Length [ft/ln]	656.01	260.98	257.32	26.49	572.92	536.59	390.23	397.64	271.84	211.65	185.37

Movement, Approach, & Intersection Results

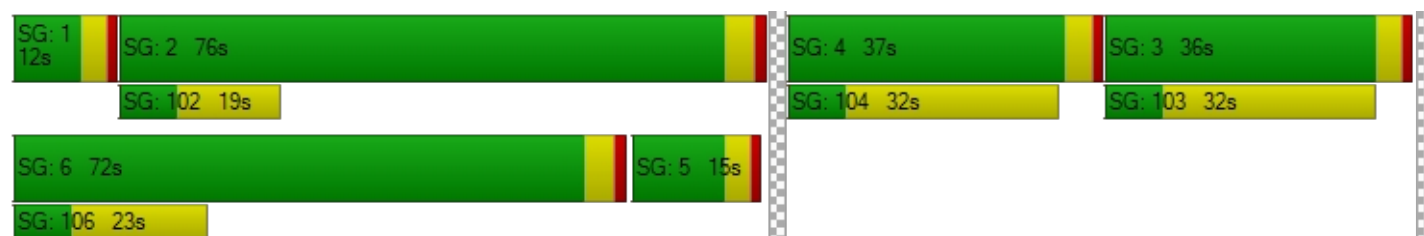
d_M, Delay for Movement [s/veh]	337.63	12.87	12.88	78.56	22.95	23.67	67.51	67.46	62.80	73.08	71.29	71.29
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	84.31			23.78			66.33			72.25		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	55.07											
Intersection LOS	E											
Intersection V/C	0.721											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.889			2.964			2.461			2.048		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.52			26.79			51.24			50.55		
I_b,int, Bicycle LOS Score for Intersection	2.377			2.625			2.708			1.919		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.874

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↷		↑↑↑↷		↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	844	109	2385	90	66	1665
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	38	16	0	8	25	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	882	125	2385	98	91	1665
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	225	32	608	25	23	425
Total Analysis Volume [veh/h]	900	128	2434	100	93	1699
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	96	96	96	96	96	96
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	6	60
g / C, Green / Cycle	0.26	0.26	0.52	0.52	0.07	0.63
(v / s)_i Volume / Saturation Flow Rate	0.26	0.08	0.48	0.06	0.05	0.34
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	899	419	2627	832	121	3126
d1, Uniform Delay [s]	35.66	28.68	21.46	11.88	44.23	10.10
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.71	0.15	0.68	0.02	3.88	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.31	0.93	0.12	0.77	0.54
d, Delay for Lane Group [s/veh]	44.37	28.83	22.13	11.90	48.11	10.16
Lane Group LOS	F	C	C	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.49	2.40	14.68	1.00	2.23	5.50
50th-Percentile Queue Length [ft/ln]	287.31	59.99	366.92	24.89	55.72	137.56
95th-Percentile Queue Length [veh/ln]	17.06	4.32	20.96	1.79	4.01	9.35
95th-Percentile Queue Length [ft/ln]	426.54	107.99	523.99	44.81	100.29	233.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.37	28.83	22.13	11.90	48.11	10.16
Movement LOS	F	C	C	B	D	B
d_A, Approach Delay [s/veh]	42.44		21.73		12.13	
Approach LOS	D		C		B	
d_I, Intersection Delay [s/veh]	22.49					
Intersection LOS	C					
Intersection V/C	0.874					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.76	37.76	37.76
I_p,int, Pedestrian LOS Score for Intersection	2.382	3.667	3.507
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	519	1039	1039
d_b, Bicycle Delay [s]	26.38	11.12	11.12
I_b,int, Bicycle LOS Score for Intersection	1.560	2.953	2.545
Bicycle LOS	A	C	B

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	104.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.255

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	490	25	336	50	30	344	159	3	32	15	114
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.0	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	1	0	11	22	36	2	6	2	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	508	26	336	61	52	380	161	9	34	18	114
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	127	7	84	15	13	95	40	2	9	5	29
Total Analysis Volume [veh/h]	0	508	26	336	61	52	380	161	9	34	18	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	21	21	16
g / C, Green / Cycle	0.38	0.38	0.38	0.27	0.27	0.20
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.84	0.24	0.10	0.18
s, saturation flow rate [veh/h]	1598	1526	536	1609	1670	914
c, Capacity [veh/h]	651	578	282	430	446	185
d1, Uniform Delay [s]	18.17	18.44	33.23	27.86	23.69	30.75
k, delay calibration	0.11	0.11	0.50	0.17	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.43	0.56	281.44	9.47	0.54	13.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.45	1.59	0.88	0.38	0.90
d, Delay for Lane Group [s/veh]	18.60	19.00	314.67	37.33	24.23	44.62
Lane Group LOS	B	B	F	D	C	D
Critical Lane Group	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.56	3.48	27.47	7.71	2.57	3.68
50th-Percentile Queue Length [ft/ln]	88.96	87.05	686.84	192.73	64.24	92.06
95th-Percentile Queue Length [veh/ln]	6.41	6.27	45.40	12.26	4.63	6.63
95th-Percentile Queue Length [ft/ln]	160.13	156.69	1135.10	306.57	115.63	165.71

Movement, Approach, & Intersection Results

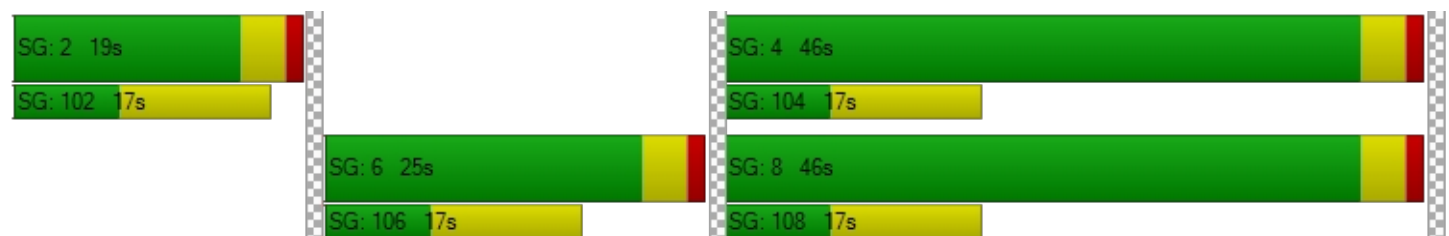
d_M, Delay for Movement [s/veh]	18.60	18.79	19.00	314.67	314.67	314.67	37.33	24.23	24.23	44.62	44.62	44.62
Movement LOS	B	B	B	F	F	F	D	C	C	D	D	D
d_A, Approach Delay [s/veh]	18.80			314.67			33.28			44.62		
Approach LOS	B			F			C			D		
d_I, Intersection Delay [s/veh]	104.20											
Intersection LOS	F											
Intersection V/C	1.255											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.30			29.30			29.30			29.30		
I_p,int, Pedestrian LOS Score for Intersection	2.140			2.405			2.134			2.521		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1062			1062			531			379		
d_b, Bicycle Delay [s]	8.69			8.69			21.32			25.95		
I_b,int, Bicycle LOS Score for Intersection	2.000			2.300			2.467			1.834		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Two-way stop	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.050

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	301	225	55	30	0	0	0	0	15	0	214
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	5	13	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	312	225	55	35	13	8	0	0	15	0	214
Peak Hour Factor	1.000	0.850	0.850	0.850	0.850	1.000	1.000	1.000	1.000	0.850	1.000	0.850
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	92	66	16	10	3	2	0	0	4	0	63
Total Analysis Volume [veh/h]	0	367	265	65	41	13	8	0	0	18	0	252
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.44
d_M, Delay for Movement [s/veh]	7.32	0.00	0.00	9.52	0.00	0.00	28.92	18.63	9.73	21.60	21.75	17.54
Movement LOS	A	A	A	A	A	A	D	C	A	C	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.24	0.24	0.24	0.16	0.16	0.16	2.71	2.71	2.71
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	6.11	6.11	6.11	3.95	3.95	3.95	67.73	67.73	67.73
d_A, Approach Delay [s/veh]	0.00			5.20			28.92			17.81		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	5.50											
Intersection LOS	D											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 50.9
 Level Of Service: F
 Volume to Capacity (v/c): 0.018

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	53	147	0	1	11	34	358	7	76	3	0	22
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.0	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	5	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	147	0	1	11	39	369	7	76	3	0	22
Peak Hour Factor	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	16	45	0	0	3	12	113	2	23	1	0	7
Total Analysis Volume [veh/h]	65	179	0	1	13	48	450	9	93	4	0	27
Pedestrian Volume [ped/h]	31			0			1			34		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.00	0.00	0.82	0.02	0.10	0.01	0.00	0.03
d_M, Delay for Movement [s/veh]	7.42	0.00	0.00	8.96	0.00	0.00	50.39	50.86	47.51	13.95	12.51	9.70
Movement LOS	A	A	A	A	A	A	F	F	E	B	B	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.13	0.00	0.00	0.00	12.29	12.29	12.29	0.14	0.14	0.14
95th-Percentile Queue Length [ft/ln]	3.28	3.28	3.28	0.08	0.08	0.08	307.36	307.36	307.36	3.38	3.38	3.38
d_A, Approach Delay [s/veh]	1.98			0.14			49.91			10.25		
Approach LOS	A			A			E			B		
d_I, Intersection Delay [s/veh]	31.90											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type: Signalized
Analysis Method: HCM 6th Edition
Analysis Period: 15 minutes

Delay (sec / veh): 58.7
Level Of Service: E
Volume to Capacity (v/c): 1.068

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	589	441	2340	206	191	1281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	16	0	0	25
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	589	441	2356	206	191	1306
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	119	633	55	51	351
Total Analysis Volume [veh/h]	633	474	2533	222	205	1404
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	64	64
g / C, Green / Cycle	0.21	0.21	0.53	0.53	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.21	0.34	0.56	0.16	0.63	0.31
s, saturation flow rate [veh/h]	3025	1389	4544	1421	324	4481
c, Capacity [veh/h]	642	295	2409	753	285	3060
d1, Uniform Delay [s]	37.01	36.95	22.15	12.30	26.18	6.90
k, delay calibration	0.04	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.40	289.33	24.26	0.08	14.48	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	1.61	1.05	0.29	0.72	0.46
d, Delay for Lane Group [s/veh]	44.42	326.27	46.41	12.38	40.66	6.94
Lane Group LOS	D	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.76	30.27	19.93	2.25	2.29	3.24
50th-Percentile Queue Length [ft/ln]	193.93	756.76	498.18	56.14	57.29	81.05
95th-Percentile Queue Length [veh/ln]	12.32	47.93	28.31	4.04	4.12	5.84
95th-Percentile Queue Length [ft/ln]	308.12	1198.22	707.84	101.05	103.12	145.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.42	326.27	46.41	12.38	40.66	6.94
Movement LOS	D	F	F	B	D	A
d_A, Approach Delay [s/veh]	165.10		43.66		11.24	
Approach LOS	F		D		B	
d_I, Intersection Delay [s/veh]	58.70					
Intersection LOS	E					
Intersection V/C	1.068					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.75	36.75	36.75
I_p,int, Pedestrian LOS Score for Intersection	2.865	3.701	3.560
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	425	1061	1061
d_b, Bicycle Delay [s]	29.35	10.38	10.38
I_b,int, Bicycle LOS Score for Intersection	1.560	3.075	2.445
Bicycle LOS	A	C	B

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	163.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.279

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	37	241	20	95	327	47	424	15	290	196	13	492
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	0	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	241	20	95	327	47	424	15	293	196	13	492
Peak Hour Factor	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	68	6	27	93	13	120	4	83	56	4	140
Total Analysis Volume [veh/h]	48	274	23	108	372	53	482	17	333	223	15	559
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	31	0	18	39	0	0	38	38	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	9	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	7	35	34	83	39	39
g / C, Green / Cycle	0.05	0.26	0.05	0.27	0.26	0.64	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.18	0.04	0.27	0.51	0.24	0.33	0.34
s, saturation flow rate [veh/h]	1353	1667	2868	1583	987	1405	960	1442
c, Capacity [veh/h]	63	435	155	425	258	897	288	433
d1, Uniform Delay [s]	61.23	43.17	60.45	47.56	48.01	11.11	45.49	45.49
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.39	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.62	8.38	5.56	43.73	434.24	0.91	76.94	80.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.68	0.70	1.00	1.93	0.37	1.08	1.12
d, Delay for Lane Group [s/veh]	77.85	51.55	66.02	91.29	482.25	12.02	122.42	125.52
Lane Group LOS	E	D	E	F	F	B	F	F
Critical Lane Group	No	No	No	Yes	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.86	9.61	1.88	18.82	39.43	4.65	15.38	23.48
50th-Percentile Queue Length [ft/ln]	46.57	240.25	46.88	470.48	985.84	116.29	384.58	586.99
95th-Percentile Queue Length [veh/ln]	3.35	14.69	3.38	25.94	64.20	8.19	22.88	33.70
95th-Percentile Queue Length [ft/ln]	83.83	367.35	84.38	648.45	1605.06	204.71	572.12	842.41

Movement, Approach, & Intersection Results

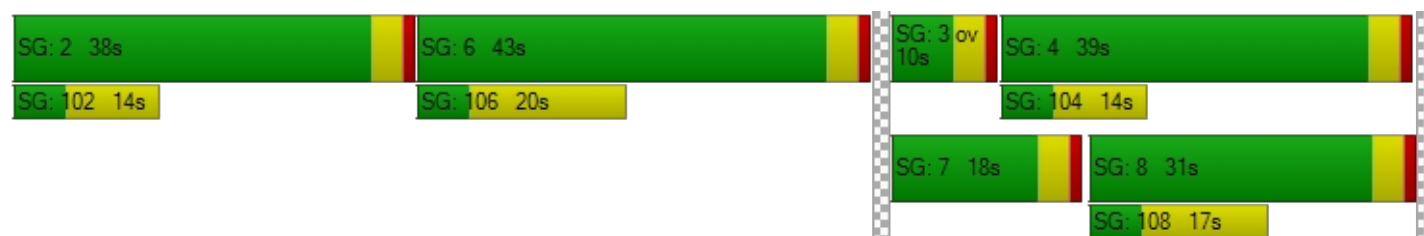
d_M, Delay for Movement [s/veh]	77.85	51.55	51.55	66.02	91.29	91.29	482.25	482.25	12.02	122.42	122.42	124.88
Movement LOS	E	D	D	E	F	F	F	F	B	F	F	F
d_A, Approach Delay [s/veh]	55.21			86.17			294.05			124.31		
Approach LOS	E			F			F			F		
d_I, Intersection Delay [s/veh]	163.02											
Intersection LOS	F											
Intersection V/C	1.279											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	56.31			56.31			56.31			56.31		
I_p,int, Pedestrian LOS Score for Intersection	2.373			2.679			2.267			2.380		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	415			538			523			600		
d_b, Bicycle Delay [s]	40.81			34.71			35.45			31.85		
I_b,int, Bicycle LOS Score for Intersection	2.129			2.439			2.932			2.875		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	114.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.076

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	147	108	1112	172	217	133	122	2046	163	583	822	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	0	0	0	0	11	5	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	156	108	1112	172	217	117	122	2057	62	583	838	34
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	40	28	287	44	56	30	31	530	16	150	216	9
Total Analysis Volume [veh/h]	161	111	1146	177	224	121	126	2121	64	601	864	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	12	15	43	9	13	13	8	40	40	24	56	56
g / C, Green / Cycle	0.11	0.14	0.40	0.08	0.12	0.12	0.07	0.37	0.37	0.22	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.62	0.10	0.14	0.08	0.05	0.42	0.04	0.18	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1479	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	194	206	740	146	191	176	176	1884	543	733	2580	840
d1, Uniform Delay [s]	46.98	43.23	32.19	49.49	47.56	45.34	49.09	33.94	22.32	40.08	15.05	12.70
k, delay calibration	0.11	0.11	0.50	0.42	0.20	0.29	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.66	2.18	253.39	138.12	98.19	11.93	5.34	58.52	0.10	2.34	0.08	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.54	1.55	1.21	1.17	0.69	0.72	1.13	0.12	0.82	0.33	0.04
d, Delay for Lane Group [s/veh]	55.64	45.41	285.58	187.61	145.75	57.28	54.43	92.46	22.41	42.41	15.12	12.72
Lane Group LOS	E	D	F	F	F	E	D	F	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	4.60	1.41	23.35	9.57	5.20	3.72	1.79	26.14	1.08	7.75	4.02	0.42
50th-Percentile Queue Length [ft/ln]	115.03	35.24	583.79	239.23	130.07	92.99	44.70	653.45	27.06	193.76	100.50	10.38
95th-Percentile Queue Length [veh/ln]	8.12	2.54	39.04	15.64	9.36	6.70	3.22	37.36	1.95	12.32	7.24	0.75
95th-Percentile Queue Length [ft/ln]	202.98	63.43	976.02	390.93	234.12	167.38	80.46	934.01	48.70	307.90	180.91	18.68

Movement, Approach, & Intersection Results

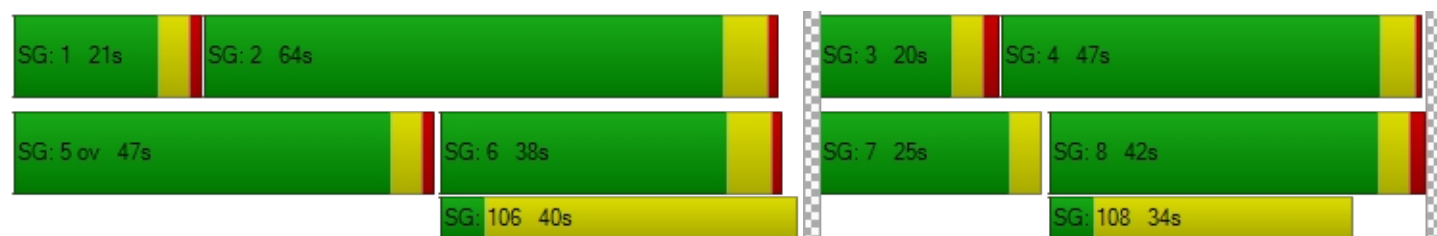
d_M, Delay for Movement [s/veh]	55.64	45.41	285.58	187.61	145.75	57.28	54.43	92.46	22.41	42.41	15.12	12.72
Movement LOS	E	D	F	F	F	E	D	F	C	D	B	B
d_A, Approach Delay [s/veh]	240.68			139.44			88.44			26.00		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	114.32											
Intersection LOS	F											
Intersection V/C	1.076											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.31	0.00	45.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.119	0.000	3.324	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	790	684	593	1075
d_b, Bicycle Delay [s]	19.75	23.38	26.68	11.53
I_b,int, Bicycle LOS Score for Intersection	2.729	2.003	2.889	2.385
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	105.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.078

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	71	1861	3390	56	375	978
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	1.50	2.40	16.10	4.90	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	9	2	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	1861	3399	58	375	991
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	475	867	15	96	253
Total Analysis Volume [veh/h]	76	1899	3468	59	383	1011
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8		7		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	7		8		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	90	140	50	140
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	15	55	90	90	36	130
g / C, Green / Cycle	0.10	0.36	0.58	0.58	0.23	0.84
(v / s)_i Volume / Saturation Flow Rate	0.02	0.45	0.68	0.04	0.11	0.20
s, saturation flow rate [veh/h]	3264	4237	5077	1399	3378	5020
c, Capacity [veh/h]	316	1513	2952	813	792	4213
d1, Uniform Delay [s]	64.62	49.75	32.39	14.15	51.16	2.51
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	115.18	79.64	0.05	0.17	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	1.25	1.17	0.07	0.48	0.24
d, Delay for Lane Group [s/veh]	64.77	164.93	112.03	14.19	51.33	2.54
Lane Group LOS	E	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.39	35.38	54.57	0.87	6.26	1.24
50th-Percentile Queue Length [ft/ln]	34.87	884.62	1364.25	21.73	156.50	30.89
95th-Percentile Queue Length [veh/ln]	2.51	51.94	75.78	1.56	10.36	2.22
95th-Percentile Queue Length [ft/ln]	62.77	1298.40	1894.38	39.11	259.08	55.61

Movement, Approach, & Intersection Results

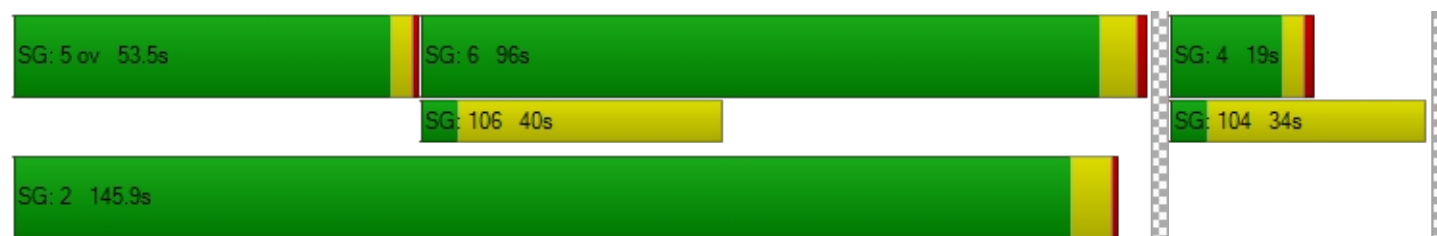
d_M, Delay for Movement [s/veh]	64.77	164.93	112.03	14.19	51.33	2.54
Movement LOS	E	F	F	B	D	A
d_A, Approach Delay [s/veh]	161.08		110.39		15.95	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	105.82					
Intersection LOS	F					
Intersection V/C	1.078					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.61	68.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.014	3.799	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	194	543	569
d_b, Bicycle Delay [s]	63.07	41.05	39.62
I_b,int, Bicycle LOS Score for Intersection	1.670	3.499	2.326
Bicycle LOS	A	C	B

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	441	0	0	87	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	4	0	0	3	7	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	4	0	0	3	448	0	0	87	2
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	1	0	0	1	112	0	0	22	1
Total Analysis Volume [veh/h]	0	0	0	4	0	0	3	448	0	0	87	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.99	13.08	10.89	13.07	13.14	8.78	7.39	0.00	0.00	8.24	0.00	0.00
Movement LOS	B	B	B	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.03	0.03	0.03	0.01	0.01	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.67	0.67	0.67	0.15	0.15	0.15	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	12.32			13.07			0.05			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.14											
Intersection LOS	B											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	441	87	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	7	4	2	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	0	7	445	89	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	2	111	22	1
Total Analysis Volume [veh/h]	7	0	7	445	89	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.40	8.83	7.41	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.04	0.04	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.08	1.08	0.35	0.35	0.00	0.00
d_A, Approach Delay [s/veh]	12.40		0.11		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.25					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	506	0	0	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	6	35	25	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	38	512	35	25	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	10	128	9	6	11
Total Analysis Volume [veh/h]	0	38	512	35	25	45
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.07	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	13.71	12.04	0.00	0.00	8.61	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	5.56	5.56	0.00	0.00	1.88	1.88
d_A, Approach Delay [s/veh]	12.04		0.00		3.07	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.03					
Intersection LOS	B					

123 Independence Drive Project

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Independence_DUDEK_Base3_AM.vistro
Report File: P:\...\2040 AM.pdf

Scenario 21 Cumulative (2040) AM

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.822	61.9	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	1.112	61.6	E
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.913	21.8	C
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	EB Left	0.839	31.7	C
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	EB Left	1.224	64.9	E
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.919	48.3	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.836	60.3	E
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.742	11.7	B
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.576	328.6	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	WB Left	0.439	76.5	F
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Left	0.590	47.9	E
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.182	71.9	E
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	SB Right	0.856	87.1	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	1.170	187.2	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Left	0.779	13.2	B
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	WB Thru	0.002	0.0	A
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	WB Thru	0.002	0.0	A

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	EB Thru	0.009	0.0	A
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	61.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	162	27	1389	10	30	7	8	532	296	2035	702	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1389	10	30	7	8	532	296	2035	702	34
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	7	362	3	8	2	2	139	77	530	183	9
Total Analysis Volume [veh/h]	169	28	1447	10	31	7	8	554	308	2120	731	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.01	0.01	0.18	0.18	0.21	0.42	0.42
s, saturation flow rate [veh/h]	1822	4123	1863	1610	1625	1480	1438	5075	1805
c, Capacity [veh/h]	115	2272	339	293	319	290	282	2533	901
d1, Uniform Delay [s]	74.97	24.78	54.28	54.32	63.12	63.12	63.68	34.47	34.87
k, delay calibration	0.50	0.50	0.04	0.04	0.40	0.40	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	357.56	1.38	0.03	0.04	29.52	31.45	80.32	3.48	9.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.72	0.64	0.07	0.08	0.92	0.92	1.09	0.84	0.85
d, Delay for Lane Group [s/veh]	432.53	26.16	54.31	54.36	92.64	94.57	144.00	37.95	44.75
Lane Group LOS	F	C	D	D	F	F	F	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	16.12	12.95	0.86	0.78	14.40	13.28	17.71	24.31	28.24
50th-Percentile Queue Length [ft/ln]	403.12	323.78	21.43	19.47	360.09	332.01	442.68	607.81	705.88
95th-Percentile Queue Length [veh/ln]	26.04	18.85	1.54	1.40	20.63	19.26	25.78	32.40	36.95
95th-Percentile Queue Length [ft/ln]	650.94	471.33	38.58	35.04	515.70	481.43	644.50	809.97	923.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	432.53	432.53	26.16	54.31	54.34	54.36	92.64	93.57	144.00	37.95	44.75	44.75
Movement LOS	F	F	C	D	D	D	F	F	F	D	D	D
d_A, Approach Delay [s/veh]	74.85			54.33			111.42			39.76		
Approach LOS	E			D			F			D		
d_I, Intersection Delay [s/veh]	61.92											
Intersection LOS	E											
Intersection V/C	0.822											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.593			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.76			54.89			52.33			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.272			1.599			2.277			6.322		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	61.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.112

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1854	0	0	866	771	1251
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1854	0	0	866	771	1251
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	478	0	0	223	199	322
Total Analysis Volume [veh/h]	1911	0	0	893	795	1290
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.55	0.26	0.23	0.47
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	14.62	8.90	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.24
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.42	0.67	0.23	153.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.43	0.66	1.33
d, Delay for Lane Group [s/veh]	23.04	9.57	22.10	179.25
Lane Group LOS	C	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.40	3.89	6.00	29.21
50th-Percentile Queue Length [ft/ln]	384.99	97.13	149.89	730.22
95th-Percentile Queue Length [veh/ln]	21.84	6.99	10.01	44.86
95th-Percentile Queue Length [ft/ln]	545.89	174.84	250.29	1121.47

Movement, Approach, & Intersection Results

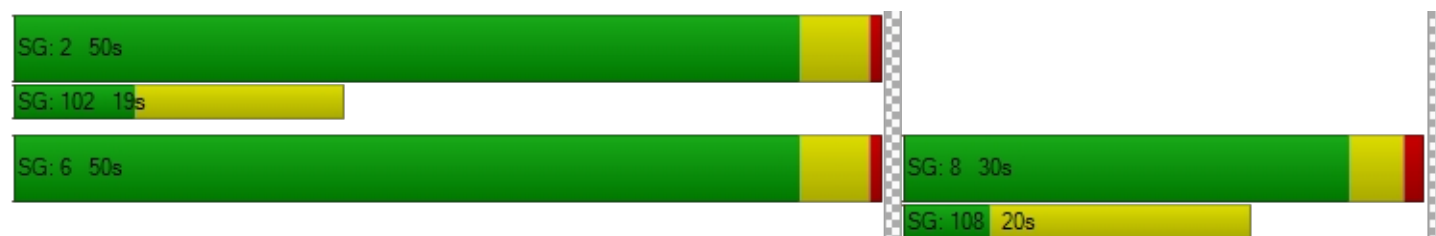
d_M, Delay for Movement [s/veh]	23.04	0.00	0.00	9.57	22.10	179.25
Movement LOS	C			A	C	F
d_A, Approach Delay [s/veh]	23.04		9.57		119.33	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	61.64					
Intersection LOS	E					
Intersection V/C	1.112					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.125	2.633
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	3.136	2.296	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.913

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1036	1451	217	1360	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1036	1451	217	1360	551
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	264	370	54	347	141
Total Analysis Volume [veh/h]	0	1057	1481	217	1388	562
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.26	0.42	0.41	0.20
s, saturation flow rate [veh/h]	4000	3515	3373	2782
c, Capacity [veh/h]	2121	1772	1394	1150
d1, Uniform Delay [s]	11.97	16.98	23.37	17.23
k, delay calibration	0.50	0.50	0.05	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	4.86	6.91	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.84	1.00	0.49
d, Delay for Lane Group [s/veh]	12.81	21.83	30.28	17.35
Lane Group LOS	B	C	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.50	11.29	13.31	3.59
50th-Percentile Queue Length [ft/ln]	137.43	282.36	332.82	89.86
95th-Percentile Queue Length [veh/ln]	9.34	16.81	19.30	6.47
95th-Percentile Queue Length [ft/ln]	233.55	420.15	482.42	161.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.81	21.83	0.00	30.28	17.35
Movement LOS		B	C		C	B
d_A, Approach Delay [s/veh]	12.81		21.83		26.55	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	21.76					
Intersection LOS	C					
Intersection V/C	0.913					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	3.008	0.000	2.670
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.432	2.781	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	42	1319	7	447	1215	346	355	20	0	13	4	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	1.70	0.00	0.00	0.00	0.00	12.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	42	1319	7	447	1215	346	355	20	0	13	4	9
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	366	2	124	338	96	99	6	0	4	1	3
Total Analysis Volume [veh/h]	47	1466	8	497	1350	384	394	22	0	14	4	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	96	96	112	102	102	35	35	7	7
g / C, Green / Cycle	0.05	0.60	0.60	0.70	0.64	0.64	0.22	0.22	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.49	0.47	0.51	0.22	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1758	3532	1849	1018	1840	1707	1785	1900	1829	2555
c, Capacity [veh/h]	82	2122	1111	693	1177	1092	390	415	82	115
d1, Uniform Delay [s]	74.70	17.54	17.54	16.51	19.61	21.08	62.47	49.38	73.64	73.20
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.71	1.35	6.27	4.13	5.97	47.90	0.04	0.98	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.46	0.46	0.72	0.74	0.79	1.01	0.05	0.22	0.09
d, Delay for Lane Group [s/veh]	79.39	18.25	18.89	22.78	23.74	27.05	110.37	49.42	74.62	73.44
Lane Group LOS	E	B	B	C	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.00	9.94	10.62	3.83	22.48	24.52	21.21	0.72	0.75	0.20
50th-Percentile Queue Length [ft/ln]	50.05	248.61	265.39	95.86	562.06	613.12	530.25	17.95	18.64	5.09
95th-Percentile Queue Length [veh/ln]	3.60	15.12	15.96	6.90	30.26	32.65	28.92	1.29	1.34	0.37
95th-Percentile Queue Length [ft/ln]	90.09	377.90	398.98	172.55	756.46	816.16	723.06	32.31	33.55	9.16

Movement, Approach, & Intersection Results

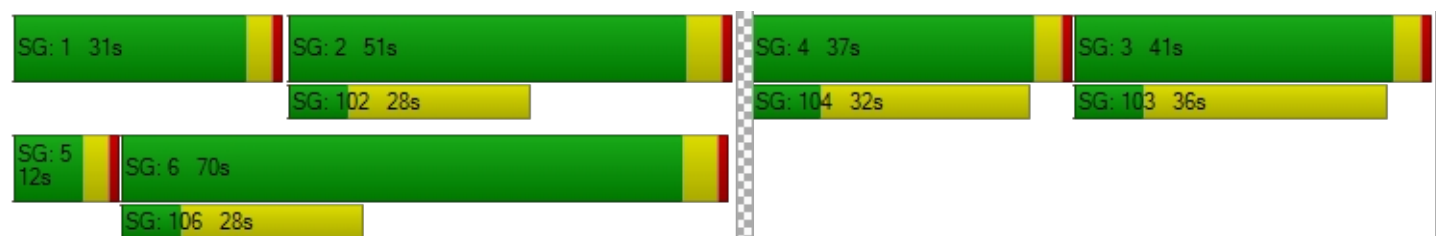
d_M, Delay for Movement [s/veh]	79.39	18.47	18.89	22.78	24.92	27.05	110.37	49.42	49.42	74.62	74.62	73.44
Movement LOS	E	B	B	C	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	20.35			24.81			107.14			74.20		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	31.69											
Intersection LOS	C											
Intersection V/C	0.839											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.43			68.43			69.35			69.35		
I_p,int, Pedestrian LOS Score for Intersection	3.089			3.297			2.198			2.945		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.61			28.18			50.54			47.41		
I_b,int, Bicycle LOS Score for Intersection	2.396			3.400			2.246			1.703		
Bicycle LOS	B			C			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Marsh Rd/Bay Rd

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 64.9
 Level Of Service: E
 Volume to Capacity (v/c): 1.224

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	838	82	425	749	47	338	69	2	48	57	339
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	838	82	425	749	47	338	69	2	48	57	339
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	214	21	108	191	12	86	18	1	12	15	86
Total Analysis Volume [veh/h]	0	855	84	434	764	48	345	70	2	49	58	346
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			12			9			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	30	30
g / C, Green / Cycle	0.33	0.33	0.20	0.57	0.57	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.25	0.23	0.23	0.64	0.26
s, saturation flow rate [veh/h]	1882	1656	1708	1807	1762	648	1712
c, Capacity [veh/h]	669	549	343	1030	1004	323	688
d1, Uniform Delay [s]	24.40	24.41	32.07	9.60	9.62	31.07	21.91
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.43	11.64	129.85	1.15	1.19	151.45	3.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.80	1.26	0.40	0.40	1.29	0.66
d, Delay for Lane Group [s/veh]	31.83	36.05	161.92	10.75	10.81	182.52	25.29
Lane Group LOS	C	D	F	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.38	8.82	18.68	3.76	3.71	19.95	7.56
50th-Percentile Queue Length [ft/ln]	234.56	220.54	467.07	94.06	92.65	498.71	189.10
95th-Percentile Queue Length [veh/ln]	14.41	13.69	28.83	6.77	6.67	31.55	12.07
95th-Percentile Queue Length [ft/ln]	360.14	342.32	720.64	169.30	166.76	788.72	301.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.83	33.59	36.05	161.92	10.78	10.81	182.52	182.52	182.52	25.29	25.29	25.29
Movement LOS	C	C	D	F	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	33.81			63.43			182.52			25.29		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	64.92											
Intersection LOS	E											
Intersection V/C	1.224											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.82			29.82			29.82			19.73		
I_p,int, Pedestrian LOS Score for Intersection	2.693			3.419			1.921			2.199		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.73			8.70			17.50			17.44		
I_b,int, Bicycle LOS Score for Intersection	2.334			2.588			2.248			2.307		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	495	278	427	395	359	538
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	3.00	2.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	495	36	427	395	359	111
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	130	9	112	104	94	29
Total Analysis Volume [veh/h]	521	38	449	416	378	117
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	3		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		23		22	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	26	52	21	17	17	17
g / C, Green / Cycle	0.33	0.67	0.27	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.30	0.02	0.25	0.22	0.20	0.08
s, saturation flow rate [veh/h]	1724	1559	1781	1870	1885	1525
c, Capacity [veh/h]	575	1052	489	410	413	334
d1, Uniform Delay [s]	24.70	4.19	27.28	30.29	29.59	25.53
k, delay calibration	0.08	0.04	0.30	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.40	0.01	16.90	48.36	27.38	2.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.04	0.92	1.02	0.92	0.35
d, Delay for Lane Group [s/veh]	29.10	4.20	44.18	78.65	56.96	28.41
Lane Group LOS	C	A	D	F	E	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.26	0.16	9.94	12.80	9.72	2.02
50th-Percentile Queue Length [ft/ln]	231.58	4.04	248.42	320.06	242.92	50.58
95th-Percentile Queue Length [veh/ln]	14.25	0.29	15.11	18.83	14.83	3.64
95th-Percentile Queue Length [ft/ln]	356.36	7.28	377.67	470.69	370.72	91.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.10	4.20	44.18	78.65	56.96	28.41
Movement LOS	C	A	D	F	E	C
d_A, Approach Delay [s/veh]	27.41		60.76		50.21	
Approach LOS	C		E		D	
d_I, Intersection Delay [s/veh]	48.32					
Intersection LOS	D					
Intersection V/C	0.919					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.66	0.00	44.10
I_p,int, Pedestrian LOS Score for Intersection	2.903	0.000	3.161
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	129	516	516
d_b, Bicycle Delay [s]	33.90	21.56	21.54
I_b,int, Bicycle LOS Score for Intersection	1.560	2.987	3.081
Bicycle LOS	A	C	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	60.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	228	973	126	29	1008	409	628	77	230	38	22	25
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	228	973	126	29	1008	409	628	77	215	38	22	25
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	59	251	32	7	260	105	162	20	55	10	6	6
Total Analysis Volume [veh/h]	235	1003	130	30	1039	422	647	79	222	39	23	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	95	95	5	88	88	39	39	39	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.55	0.55	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.42	0.43	0.21	0.21	0.15	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	1823	1648	1717	1706	1527	1439	1214
c, Capacity [veh/h]	142	1121	1070	58	1004	907	418	415	372	107	91
d1, Uniform Delay [s]	73.44	18.69	18.79	75.88	27.61	28.18	58.13	57.98	53.34	70.35	71.32
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.18	0.17	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	322.04	1.69	1.81	2.58	5.25	6.45	9.29	8.61	1.14	1.52	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.65	0.51	0.52	0.51	0.75	0.78	0.88	0.87	0.60	0.36	0.54
d, Delay for Lane Group [s/veh]	395.48	20.37	20.60	78.45	32.87	34.63	67.42	66.60	54.49	71.87	75.00
Lane Group LOS	F	C	C	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.58	12.83	12.50	1.26	23.32	22.36	15.46	15.12	8.13	1.59	2.06
50th-Percentile Queue Length [ft/ln]	464.41	320.66	312.39	31.42	583.02	559.01	386.49	377.88	203.15	39.66	51.39
95th-Percentile Queue Length [veh/ln]	29.63	18.70	18.29	2.26	31.24	30.12	21.91	21.49	12.80	2.86	3.70
95th-Percentile Queue Length [ft/ln]	740.87	467.49	457.32	56.56	781.01	752.88	547.70	537.28	320.02	71.40	92.51

Movement, Approach, & Intersection Results

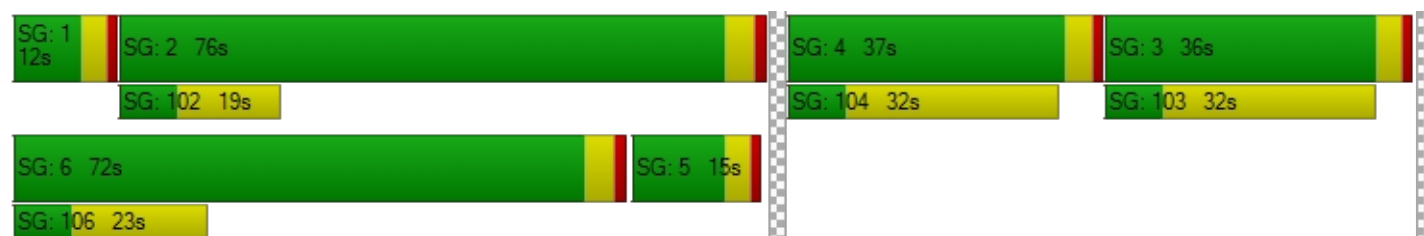
d_M, Delay for Movement [s/veh]	395.48	20.47	20.60	78.45	33.35	34.63	67.06	66.60	54.49	71.87	75.00	75.00
Movement LOS	F	C	C	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	84.90			34.62			64.08			73.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	60.33											
Intersection LOS	E											
Intersection V/C	0.836											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.989			3.081			2.513			2.056		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.688			2.790			3.149			1.705		
Bicycle LOS	B			C			C			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	11.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	375	65	1889	456	156	2299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	375	65	1889	456	156	2299
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	97	17	487	118	40	593
Total Analysis Volume [veh/h]	387	67	1947	470	161	2370
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	48	48	48	48	48	48
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	8	8	20	20	6	30
g / C, Green / Cycle	0.16	0.16	0.42	0.42	0.11	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.04	0.39	0.31	0.09	0.47
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	504	240	2079	626	206	3105
d1, Uniform Delay [s]	19.50	17.92	13.44	11.80	20.85	6.69
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.93	0.23	0.99	0.69	2.41	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.28	0.94	0.75	0.78	0.76
d, Delay for Lane Group [s/veh]	20.44	18.15	14.43	12.49	23.27	6.84
Lane Group LOS	C	B	B	B	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	0.62	4.71	3.00	1.61	2.38
50th-Percentile Queue Length [ft/ln]	49.18	15.51	117.81	74.89	40.24	59.60
95th-Percentile Queue Length [veh/ln]	3.54	1.12	8.27	5.39	2.90	4.29
95th-Percentile Queue Length [ft/ln]	88.53	27.92	206.82	134.81	72.44	107.27

Movement, Approach, & Intersection Results

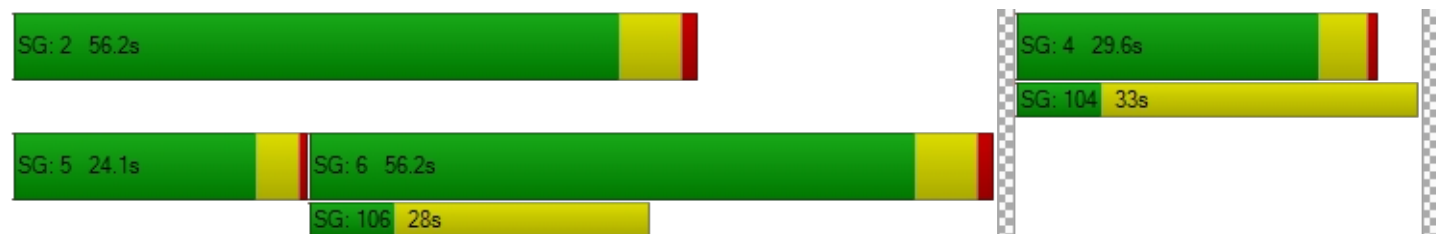
d_M, Delay for Movement [s/veh]	20.44	18.15	14.43	12.49	23.27	6.84
Movement LOS	C	B	B	B	C	A
d_A, Approach Delay [s/veh]	20.10		14.05		7.88	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	11.67					
Intersection LOS	B					
Intersection V/C	0.742					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.41	14.41	14.41
I_p,int, Pedestrian LOS Score for Intersection	2.316	3.636	3.508
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1035	2070	2070
d_b, Bicycle Delay [s]	5.62	0.03	0.03
I_b,int, Bicycle LOS Score for Intersection	1.560	2.889	2.952
Bicycle LOS	A	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	328.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.576

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	228	23	181	358	77	123	310	344	38	63	190
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	17.90	100.0	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	228	23	181	358	77	123	310	344	38	63	190
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	63	6	50	99	21	34	86	96	11	18	53
Total Analysis Volume [veh/h]	0	253	26	201	398	86	137	344	382	42	70	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.80	0.10	0.47	0.31
s, saturation flow rate [veh/h]	1371	1288	858	1357	1552	1043
c, Capacity [veh/h]	439	379	298	399	457	306
d1, Uniform Delay [s]	28.08	28.37	42.33	28.22	35.95	35.99
k, delay calibration	0.11	0.11	0.50	0.11	0.50	0.49
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.42	0.58	593.42	0.51	275.49	66.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.36	2.30	0.34	1.59	1.06
d, Delay for Lane Group [s/veh]	28.51	28.94	635.75	28.72	311.44	102.31
Lane Group LOS	C	C	F	C	F	F
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	2.75	2.67	56.78	2.66	46.02	13.05
50th-Percentile Queue Length [ft/ln]	68.74	66.81	1419.55	66.56	1150.57	326.17
95th-Percentile Queue Length [veh/ln]	4.95	4.81	92.84	4.79	71.53	19.59
95th-Percentile Queue Length [ft/ln]	123.73	120.26	2321.04	119.80	1788.17	489.77

Movement, Approach, & Intersection Results

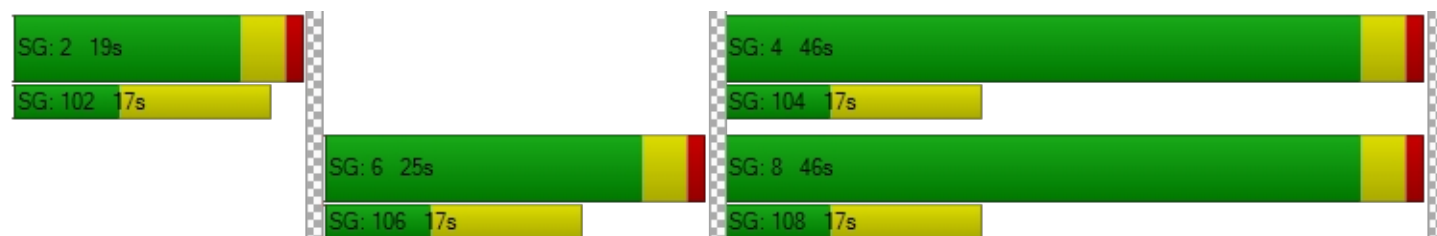
d_M, Delay for Movement [s/veh]	28.51	28.70	28.94	635.75	635.75	635.75	28.72	311.44	311.44	102.31	102.31	102.31
Movement LOS	C	C	C	F	F	F	C	F	F	F	F	F
d_A, Approach Delay [s/veh]	28.72			635.75			266.56			102.31		
Approach LOS	C			F			F			F		
d_I, Intersection Delay [s/veh]	328.65											
Intersection LOS	F											
Intersection V/C	1.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	40.56			40.56			40.56			40.56		
I_p,int, Pedestrian LOS Score for Intersection	2.304			2.364			2.277			2.442		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	824			824			412			294		
d_b, Bicycle Delay [s]	17.62			17.62			32.13			37.07		
I_b,int, Bicycle LOS Score for Intersection	1.790			2.690			2.984			2.093		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Two-way stop	Delay (sec / veh):	76.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.439

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	105	105	442	303	0	0	0	0	27	0	159
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	105	105	442	303	0	0	0	0	27	0	159
Peak Hour Factor	1.000	0.910	0.910	0.910	0.910	1.000	1.000	1.000	1.000	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	29	29	121	83	0	0	0	0	7	0	44
Total Analysis Volume [veh/h]	0	115	115	486	333	0	0	0	0	30	0	175
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.44	0.00	0.21
d_M, Delay for Movement [s/veh]	7.94	0.00	0.00	9.24	0.00	0.00	82.59	61.05	10.08	76.54	75.58	28.21
Movement LOS	A	A	A	A	A	A	F	F	B	F	F	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	1.69	1.69	1.69	0.00	0.00	0.00	4.25	4.25	4.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	42.32	42.32	42.32	0.00	0.00	0.00	106.30	106.30	106.30
d_A, Approach Delay [s/veh]	0.00			5.48			51.24			35.28		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	9.35											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	47.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.590

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	32	49	3	30	137	163	104	1	45	18	7	57
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.0	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	49	3	30	137	163	104	1	45	18	7	57
Peak Hour Factor	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	17	1	10	48	57	36	0	16	6	2	20
Total Analysis Volume [veh/h]	44	68	4	42	190	226	144	1	63	25	10	79
Pedestrian Volume [ped/h]	70			0			137			17		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.04	0.00	0.00	0.59	0.00	0.14	0.09	0.04	0.08
d_M, Delay for Movement [s/veh]	9.24	0.00	0.00	8.58	0.00	0.00	47.88	45.98	41.02	20.57	21.82	10.66
Movement LOS	A	A	A	A	A	A	E	E	E	C	C	B
95th-Percentile Queue Length [veh/ln]	0.16	0.16	0.16	0.13	0.13	0.13	5.28	5.28	5.28	0.83	0.83	0.83
95th-Percentile Queue Length [ft/ln]	3.88	3.88	3.88	3.13	3.13	3.13	131.93	131.93	131.93	20.63	20.63	20.63
d_A, Approach Delay [s/veh]	3.50			0.79			45.79			13.81		
Approach LOS	A			A			E			B		
d_I, Intersection Delay [s/veh]	13.24											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	71.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.182

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	284	283	1741	813	616	2152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	284	283	1741	813	616	2152
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	75	74	458	214	162	566
Total Analysis Volume [veh/h]	299	298	1833	856	648	2265
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	79	79
g / C, Green / Cycle	0.18	0.18	0.46	0.46	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.41	0.61	1.09	0.50
s, saturation flow rate [veh/h]	3078	1188	4470	1393	592	4518
c, Capacity [veh/h]	565	218	2051	639	489	3279
d1, Uniform Delay [s]	40.24	44.50	27.07	29.50	37.94	8.22
k, delay calibration	0.04	0.50	0.04	0.50	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	191.57	0.58	163.38	160.44	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	1.37	0.89	1.34	1.33	0.69
d, Delay for Lane Group [s/veh]	40.53	236.07	27.65	192.88	198.38	8.32
Lane Group LOS	D	F	C	F	F	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.64	17.43	13.16	43.86	25.16	7.21
50th-Percentile Queue Length [ft/ln]	90.96	435.83	328.90	1096.45	629.08	180.17
95th-Percentile Queue Length [veh/ln]	6.55	27.78	19.10	66.02	40.72	11.61
95th-Percentile Queue Length [ft/ln]	163.74	694.49	477.62	1650.56	1017.93	290.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.53	236.07	27.65	192.88	198.38	8.32
Movement LOS	D	F	C	F	F	A
d_A, Approach Delay [s/veh]	138.14		80.25		50.60	
Approach LOS	F		F		D	
d_I, Intersection Delay [s/veh]	71.89					
Intersection LOS	E					
Intersection V/C	1.182					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.06	44.06	44.06
I_p,int, Pedestrian LOS Score for Intersection	3.243	3.802	3.657
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	917	917
d_b, Bicycle Delay [s]	36.33	15.97	15.97
I_b,int, Bicycle LOS Score for Intersection	1.560	3.039	3.162
Bicycle LOS	A	C	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	87.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	272	356	196	766	348	423	80	10	111	42	24	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	356	196	766	348	423	80	10	111	42	24	84
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	69	91	50	195	89	108	20	3	28	11	6	21
Total Analysis Volume [veh/h]	278	363	200	782	355	432	82	10	113	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	37	0	20	37	0	0	24	24	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	34	29	43	11	49	10	10
g / C, Green / Cycle	0.20	0.34	0.29	0.43	0.11	0.49	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.18	0.40	0.25	0.52	0.08	0.10	0.08	0.06
s, saturation flow rate [veh/h]	1572	1397	3105	1517	1120	1103	871	1372
c, Capacity [veh/h]	314	477	888	648	129	543	144	135
d1, Uniform Delay [s]	38.91	32.95	34.08	28.63	42.69	14.33	44.33	43.37
k, delay calibration	0.15	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.95	101.39	3.06	109.96	7.19	0.19	2.39	4.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	1.18	0.88	1.21	0.72	0.21	0.47	0.63
d, Delay for Lane Group [s/veh]	49.86	134.34	37.14	138.60	49.87	14.51	46.72	48.18
Lane Group LOS	D	F	D	F	D	B	D	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.49	24.59	9.24	34.58	2.43	1.43	1.73	2.19
50th-Percentile Queue Length [ft/ln]	187.23	614.83	230.95	864.52	60.81	35.87	43.34	54.64
95th-Percentile Queue Length [veh/ln]	11.98	36.27	14.22	50.36	4.38	2.58	3.12	3.93
95th-Percentile Queue Length [ft/ln]	299.44	906.68	355.57	1258.98	109.47	64.57	78.02	98.36

Movement, Approach, & Intersection Results

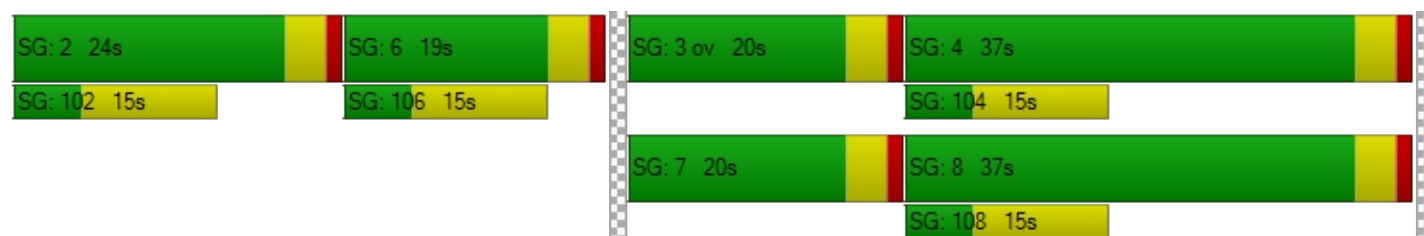
d_M, Delay for Movement [s/veh]	49.86	134.34	134.34	37.14	138.60	138.60	49.87	49.87	14.51	46.72	46.72	48.05
Movement LOS	D	F	F	D	F	F	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	106.41			88.03			30.38			47.53		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	87.11											
Intersection LOS	F											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	41.41			41.41			41.41			41.41		
I_p,int, Pedestrian LOS Score for Intersection	2.447			2.716			2.252			2.417		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	660			660			400			300		
d_b, Bicycle Delay [s]	22.45			22.45			32.00			36.13		
I_b,int, Bicycle LOS Score for Intersection	2.947			4.148			1.898			1.812		
Bicycle LOS	C			D			A			A		

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	187.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.170

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	250	596	277	38	76	72	391	420	226	1160	2508	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	250	596	277	38	76	56	391	420	120	1160	2508	72
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	64	152	71	10	19	14	100	107	31	296	640	18
Total Analysis Volume [veh/h]	255	608	283	39	78	57	399	429	122	1184	2559	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	19	19	48	9	9	9	16	41	41	25	50	50
g / C, Green / Cycle	0.17	0.16	0.42	0.08	0.08	0.08	0.14	0.36	0.36	0.22	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.15	0.39	0.16	0.03	0.06	0.05	0.12	0.09	0.08	0.36	0.51	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1077	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	282	256	745	101	97	85	479	1776	526	731	2205	709
d1, Uniform Delay [s]	46.28	47.60	22.64	49.81	51.54	50.91	47.58	25.47	25.37	44.43	31.93	18.75
k, delay calibration	0.30	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.29	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.16	628.67	0.32	2.42	13.98	8.67	3.87	0.07	0.22	282.79	73.58	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	2.37	0.38	0.39	0.80	0.67	0.83	0.24	0.23	1.62	1.16	0.10
d, Delay for Lane Group [s/veh]	69.44	676.26	22.96	52.23	65.53	59.58	51.45	25.54	25.60	327.21	105.50	18.82
Lane Group LOS	E	F	C	D	E	E	D	C	C	F	F	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.71	25.94	1.70	1.14	1.30	1.81	5.74	2.72	2.34	38.89	34.45	1.15
50th-Percentile Queue Length [ft/ln]	217.79	648.39	42.47	28.51	32.48	45.21	143.59	68.10	58.45	972.36	861.13	28.65
95th-Percentile Queue Length [veh/ln]	13.55	43.31	3.06	2.05	2.34	3.26	9.67	4.90	4.21	60.45	48.95	2.06
95th-Percentile Queue Length [ft/ln]	338.80	1082.73	76.44	51.32	58.47	81.38	241.85	122.58	105.21	1511.26	1223.69	51.56

Movement, Approach, & Intersection Results

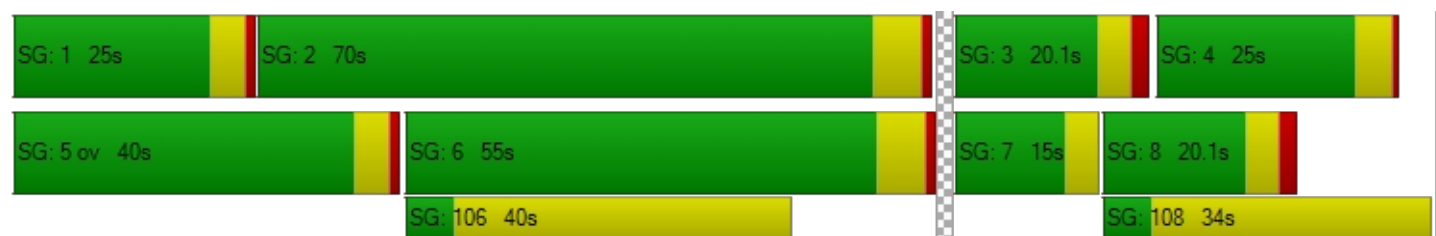
d_M, Delay for Movement [s/veh]	69.44	676.26	22.96	52.23	65.53	59.58	51.45	25.54	25.60	327.21	105.50	18.82
Movement LOS	E	F	C	D	E	E	D	C	C	F	F	B
d_A, Approach Delay [s/veh]	379.91			60.60			36.43			172.64		
Approach LOS	F			E			D			F		
d_I, Intersection Delay [s/veh]	187.20											
Intersection LOS	F											
Intersection V/C	1.170											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	48.23			0.00			48.23			0.00		
I_p,int, Pedestrian LOS Score for Intersection	3.139			0.000			3.339			0.000		
Crosswalk LOS	C			F			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	362			264			862			1125		
d_b, Bicycle Delay [s]	38.14			42.87			18.43			10.88		
I_b,int, Bicycle LOS Score for Intersection	2.505			1.716			2.140			3.658		
Bicycle LOS	B			A			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	240	416	842	63	1319	2951
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	3.60	5.40	3.50	1.60	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	416	842	63	1319	2951
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	107	217	16	340	761
Total Analysis Volume [veh/h]	247	429	868	65	1360	3042
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	7		6		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	6		7		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	35	110	75	110
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	74	74	74	74	74	74
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	8	45	20	20	32	56
g / C, Green / Cycle	0.11	0.60	0.27	0.27	0.44	0.76
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.18	0.04	0.39	0.60
s, saturation flow rate [veh/h]	3453	4166	4955	1548	3470	5049
c, Capacity [veh/h]	379	2499	1350	422	1514	3823
d1, Uniform Delay [s]	31.79	6.65	23.90	20.56	19.46	5.52
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.01	0.62	0.20	0.83	0.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.17	0.64	0.15	0.90	0.80
d, Delay for Lane Group [s/veh]	32.49	6.66	24.52	20.77	20.28	6.00
Lane Group LOS	C	A	C	C	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.07	0.83	3.94	0.77	8.71	2.72
50th-Percentile Queue Length [ft/ln]	51.76	20.63	98.54	19.26	217.66	67.92
95th-Percentile Queue Length [veh/ln]	3.73	1.49	7.09	1.39	13.55	4.89
95th-Percentile Queue Length [ft/ln]	93.17	37.13	177.37	34.68	338.64	122.26

Movement, Approach, & Intersection Results

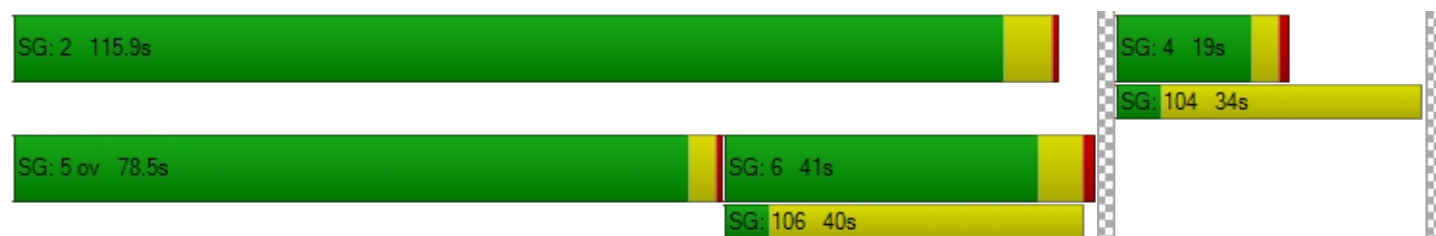
d_M, Delay for Movement [s/veh]	32.49	6.66	24.52	20.77	20.28	6.00
Movement LOS	C	A	C	C	C	A
d_A, Approach Delay [s/veh]	16.10		24.26		10.41	
Approach LOS	B		C		B	
d_I, Intersection Delay [s/veh]	13.20					
Intersection LOS	B					
Intersection V/C	0.779					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.74	28.74	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.927	3.664	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	403	941	376
d_b, Bicycle Delay [s]	23.71	10.43	24.53
I_b,int, Bicycle LOS Score for Intersection	1.670	2.073	3.981
Bicycle LOS	A	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	165	0	0	203	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	165	0	0	203	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	41	0	0	51	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	165	0	0	203	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.12	11.42	9.09	11.12	11.42	9.30	7.63	0.00	0.00	7.55	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.54			10.61			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	161	203	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	161	203	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	40	51	0
Total Analysis Volume [veh/h]	0	0	0	161	203	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.67	9.30	7.63	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.98		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	850	0	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	850	0	0	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	213	0	0	37
Total Analysis Volume [veh/h]	0	0	850	0	0	149
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	18.34	14.99	0.00	0.00	9.57	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	16.67		0.00		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_PM.vistro
Report File: P:\...\2040 PM.pdf

Scenario 21 Cumulative (2040) PM

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.980	96.3	F
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.970	21.3	C
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.798	18.0	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	EB Left	0.791	36.9	D
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.893	54.9	D
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	WB Thru	0.849	45.4	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.850	90.9	F
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	NB Left	0.943	29.8	C
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Left	1.523	151.4	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	WB Left	0.056	22.2	C
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.011	17.8	C
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.220	113.7	F
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	1.503	201.4	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.398	159.3	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	EB Thru	1.166	141.2	F
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	EB Thru	0.003	0.0	A
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	EB Thru	0.003	0.0	A

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	EB Thru	0.005	0.0	A
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	96.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	196	40	1729	12	31	5	9	756	232	2653	841	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	40	1729	12	31	5	9	756	232	2653	841	14
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	10	450	3	8	1	2	197	60	691	219	4
Total Analysis Volume [veh/h]	204	42	1801	13	32	5	9	788	242	2764	876	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.13	0.43	0.01	0.01	0.22	0.22	0.16	0.54	0.53
s, saturation flow rate [veh/h]	1824	4190	1854	1633	1892	1724	1554	5150	1680
c, Capacity [veh/h]	115	2310	337	297	371	338	305	2571	838
d1, Uniform Delay [s]	74.97	28.25	54.31	54.34	64.31	64.31	60.99	40.07	40.07
k, delay calibration	0.50	0.50	0.04	0.04	0.50	0.50	0.31	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	543.61	2.69	0.04	0.04	84.66	86.73	12.38	41.92	49.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.15	0.78	0.08	0.08	1.12	1.12	0.79	1.08	1.06
d, Delay for Lane Group [s/veh]	618.58	30.93	54.35	54.38	148.97	151.04	73.38	81.99	89.24
Lane Group LOS	F	C	D	D	F	F	E	F	F
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	22.05	18.54	0.89	0.81	23.89	21.96	10.43	43.10	43.85
50th-Percentile Queue Length [ft/ln]	551.34	463.41	22.32	20.31	597.25	548.94	260.64	1077.45	1096.30
95th-Percentile Queue Length [veh/ln]	35.12	25.60	1.61	1.46	33.97	31.54	15.72	57.10	57.50
95th-Percentile Queue Length [ft/ln]	877.94	639.93	40.18	36.55	849.34	788.58	393.02	1427.45	1437.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	618.58	618.58	30.93	54.35	54.37	54.38	148.97	149.97	73.38	81.99	89.24	89.24
Movement LOS	F	F	C	D	D	D	F	F	E	F	F	F
d_A, Approach Delay [s/veh]	101.55			54.36			132.12			83.76		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	96.30											
Intersection LOS	F											
Intersection V/C	0.980											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.677			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.73			54.89			51.89			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.937			1.601			2.417			7.590		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1879	0	0	1575	570	873
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1879	0	0	1575	570	873
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	474	0	0	398	144	220
Total Analysis Volume [veh/h]	1898	0	0	1591	576	882
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.54	0.45	0.17	0.34
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2070	2094	1183	907
d1, Uniform Delay [s]	14.49	12.04	20.28	25.52
k, delay calibration	0.50	0.50	0.04	0.06
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.92	2.66	0.12	5.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.76	0.49	0.97
d, Delay for Lane Group [s/veh]	22.41	14.69	20.39	31.39
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.05	9.66	4.02	8.46
50th-Percentile Queue Length [ft/ln]	376.20	241.61	100.61	211.46
95th-Percentile Queue Length [veh/ln]	21.41	14.76	7.24	13.23
95th-Percentile Queue Length [ft/ln]	535.24	369.06	181.10	330.71

Movement, Approach, & Intersection Results

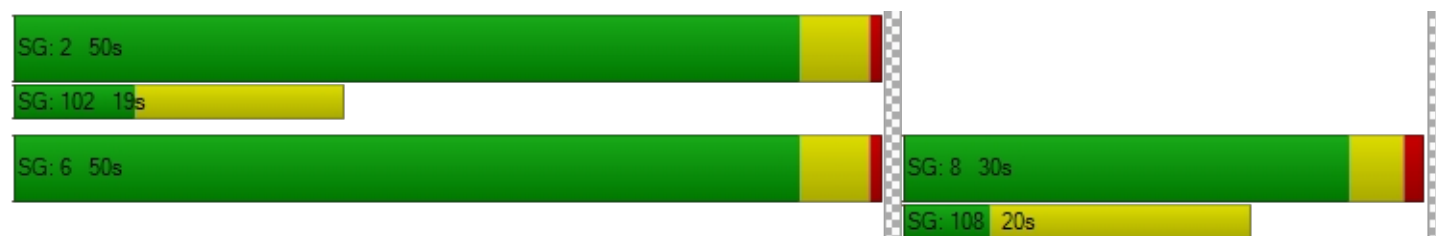
d_M, Delay for Movement [s/veh]	22.41	0.00	0.00	14.69	20.39	31.39
Movement LOS	C			B	C	C
d_A, Approach Delay [s/veh]	22.41		14.69		27.04	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.30					
Intersection LOS	C					
Intersection V/C	0.970					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.192	2.480
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.125	2.872	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	960	1193	217	1287	427
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	960	1193	217	1287	427
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	304	54	328	109
Total Analysis Volume [veh/h]	0	980	1217	217	1313	436
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		4		5	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.51	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.25	0.34	0.38	0.15
s, saturation flow rate [veh/h]	4000	3540	3414	2847
c, Capacity [veh/h]	2126	1788	1407	1174
d1, Uniform Delay [s]	11.60	14.89	22.40	16.28
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	2.11	1.36	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.68	0.93	0.37
d, Delay for Lane Group [s/veh]	12.32	17.00	23.76	16.35
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.94	7.82	11.10	2.63
50th-Percentile Queue Length [ft/ln]	123.60	195.61	277.53	65.66
95th-Percentile Queue Length [veh/ln]	8.59	12.41	16.57	4.73
95th-Percentile Queue Length [ft/ln]	214.76	310.30	414.13	118.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.32	17.00	0.00	23.76	16.35
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	12.32		17.00		21.91	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.02					
Intersection LOS	B					
Intersection V/C	0.798					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	27.17
I_p,int, Pedestrian LOS Score for Intersection	2.875	0.000	2.631
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.79	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.368	2.564	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	50	1318	7	75	1041	268	307	6	4	15	6	413
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	1.30	7.70	0.00	3.70	0.00	1.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	50	1318	7	75	1041	268	307	6	4	15	6	354
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	343	2	20	271	70	80	2	1	4	2	92
Total Analysis Volume [veh/h]	52	1373	7	78	1084	279	320	6	4	16	6	369
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	89	89	96	86	86	32	32	25	25
g / C, Green / Cycle	0.05	0.55	0.55	0.60	0.54	0.54	0.20	0.20	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.09	0.37	0.38	0.18	0.01	0.01	0.13
s, saturation flow rate [veh/h]	1761	3549	1859	909	1877	1730	1791	1665	1833	2820
c, Capacity [veh/h]	88	1966	1030	521	1016	936	360	335	290	446
d1, Uniform Delay [s]	74.34	21.34	21.34	16.22	26.83	27.26	62.12	51.33	57.34	65.18
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.39	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.78	1.48	0.05	3.83	4.50	21.83	0.03	0.08	3.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.46	0.46	0.15	0.69	0.71	0.89	0.03	0.08	0.83
d, Delay for Lane Group [s/veh]	79.01	22.12	22.83	16.27	30.66	31.77	83.95	51.35	57.42	68.18
Lane Group LOS	E	C	C	B	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.21	10.38	11.07	0.62	20.40	19.74	14.97	0.33	0.78	7.56
50th-Percentile Queue Length [ft/ln]	55.22	259.46	276.87	15.42	510.10	493.61	374.23	8.32	19.50	188.95
95th-Percentile Queue Length [veh/ln]	3.98	15.66	16.53	1.11	27.81	27.03	21.31	0.60	1.40	12.07
95th-Percentile Queue Length [ft/ln]	99.39	391.55	413.32	27.75	695.30	675.80	532.86	14.97	35.10	301.67

Movement, Approach, & Intersection Results

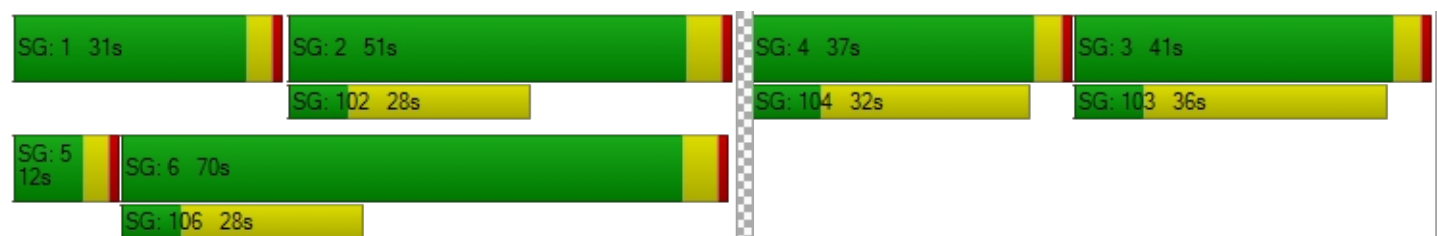
d_M, Delay for Movement [s/veh]	79.01	22.36	22.83	16.27	31.05	31.77	83.95	51.35	51.35	57.42	57.42	68.18
Movement LOS	E	C	C	B	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	24.42			30.39			82.96			67.58		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	36.88											
Intersection LOS	D											
Intersection V/C	0.791											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.033			3.199			2.148			2.562		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.57			28.18			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.347			2.748			2.104			2.302		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 54.9
 Level Of Service: D
 Volume to Capacity (v/c): 0.893

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	740	61	441	719	56	100	26	2	65	114	310
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	740	61	441	719	56	100	26	2	65	114	310
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	208	17	124	202	16	28	7	1	18	32	87
Total Analysis Volume [veh/h]	2	831	69	496	808	63	112	29	2	73	128	348
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	29	29
g / C, Green / Cycle	0.34	0.34	0.20	0.58	0.58	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.28	0.23	0.24	0.25	0.31
s, saturation flow rate [veh/h]	1859	1644	1795	1885	1829	568	1750
c, Capacity [veh/h]	676	558	361	1089	1057	287	689
d1, Uniform Delay [s]	23.53	23.59	32.07	9.33	9.35	22.04	23.57
k, delay calibration	0.50	0.50	0.28	0.50	0.50	0.32	0.41
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	9.38	178.49	1.12	1.17	3.95	7.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.76	1.38	0.40	0.41	0.50	0.80
d, Delay for Lane Group [s/veh]	29.65	32.98	210.56	10.45	10.52	25.99	31.33
Lane Group LOS	C	C	F	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.58	8.07	24.51	3.94	3.88	2.60	10.44
50th-Percentile Queue Length [ft/ln]	214.60	201.74	612.72	98.53	96.98	64.99	261.07
95th-Percentile Queue Length [veh/ln]	13.39	12.73	37.77	7.09	6.98	4.68	15.74
95th-Percentile Queue Length [ft/ln]	334.72	318.21	944.29	177.36	174.57	116.98	393.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.65	31.07	32.98	210.56	10.48	10.52	25.99	25.99	25.99	31.33	31.33	31.33
Movement LOS	C	C	C	F	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.21			83.08			25.99			31.33		
Approach LOS	C			F			C			C		
d_I, Intersection Delay [s/veh]	54.93											
Intersection LOS	D											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.82			29.82			29.82			19.73		
I_p,int, Pedestrian LOS Score for Intersection	2.736			3.057			1.848			2.249		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.74			8.66			17.46			17.43		
I_b,int, Bicycle LOS Score for Intersection	2.304			2.687			1.796			2.465		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	45.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵↑		↑↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	542	444	305	384	408	449
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	1.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	542	202	305	384	408	22
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	53	79	100	106	6
Total Analysis Volume [veh/h]	565	210	318	400	425	23
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		8		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	77	77	77	77	77	77
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	27	52	20	17	17	17
g / C, Green / Cycle	0.35	0.67	0.26	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.31	0.13	0.18	0.21	0.23	0.01
s, saturation flow rate [veh/h]	1795	1595	1795	1870	1885	1542
c, Capacity [veh/h]	628	1075	463	410	414	338
d1, Uniform Delay [s]	23.92	4.71	25.91	30.03	30.24	23.95
k, delay calibration	0.08	0.04	0.09	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.83	0.03	1.43	38.58	51.49	0.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.20	0.69	0.97	1.03	0.07
d, Delay for Lane Group [s/veh]	27.75	4.74	27.35	68.61	81.73	24.34
Lane Group LOS	C	A	C	E	F	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.83	1.00	5.23	11.47	13.28	0.36
50th-Percentile Queue Length [ft/ln]	245.74	25.08	130.80	286.64	331.89	9.02
95th-Percentile Queue Length [veh/ln]	14.97	1.81	8.98	17.02	19.54	0.65
95th-Percentile Queue Length [ft/ln]	374.28	45.15	224.58	425.46	488.57	16.23

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.75	4.74	27.35	68.61	81.73	24.34
Movement LOS	C	A	C	E	F	C
d_A, Approach Delay [s/veh]	21.51		50.33		78.78	
Approach LOS	C		D		E	
d_I, Intersection Delay [s/veh]	45.39					
Intersection LOS	D					
Intersection V/C	0.849					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.63	0.00	44.07
I_p,int, Pedestrian LOS Score for Intersection	2.901	0.000	3.155
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	129	517	517
d_b, Bicycle Delay [s]	33.91	21.36	21.44
I_b,int, Bicycle LOS Score for Intersection	1.560	2.744	3.003
Bicycle LOS	A	B	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	90.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	296	670	54	13	1009	351	471	34	235	126	87	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	296	670	54	13	1009	351	471	34	220	126	87	40
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	180	15	3	271	94	127	9	59	34	23	11
Total Analysis Volume [veh/h]	318	720	58	14	1085	377	506	37	237	135	94	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	101	101	4	92	92	29	29	29	17	17
g / C, Green / Cycle	0.08	0.63	0.63	0.02	0.58	0.58	0.18	0.18	0.18	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.21	0.01	0.40	0.42	0.15	0.15	0.15	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	1867	1680	1774	1821	1572	1751	1788
c, Capacity [veh/h]	144	1174	1139	41	1077	969	326	334	289	190	194
d1, Uniform Delay [s]	73.44	13.61	13.63	76.76	24.06	24.72	62.77	62.75	62.51	68.83	68.80
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	566.66	0.77	0.80	1.80	3.82	4.81	3.95	3.81	4.36	3.63	3.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.21	0.34	0.34	0.34	0.70	0.73	0.82	0.82	0.82	0.71	0.71
d, Delay for Lane Group [s/veh]	640.09	14.38	14.43	78.56	27.88	29.54	66.72	66.55	66.87	72.46	72.28
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	28.55	6.85	6.69	0.59	21.08	20.46	10.98	11.23	9.69	5.59	5.67
50th-Percentile Queue Length [ft/ln]	713.72	171.18	167.19	14.72	527.08	511.57	274.38	280.65	242.31	139.87	141.70
95th-Percentile Queue Length [veh/ln]	44.99	11.14	10.93	1.06	28.61	27.88	16.41	16.72	14.80	9.47	9.57
95th-Percentile Queue Length [ft/ln]	1124.68	278.46	273.21	26.49	715.34	697.04	410.21	418.02	369.96	236.84	239.31

Movement, Approach, & Intersection Results

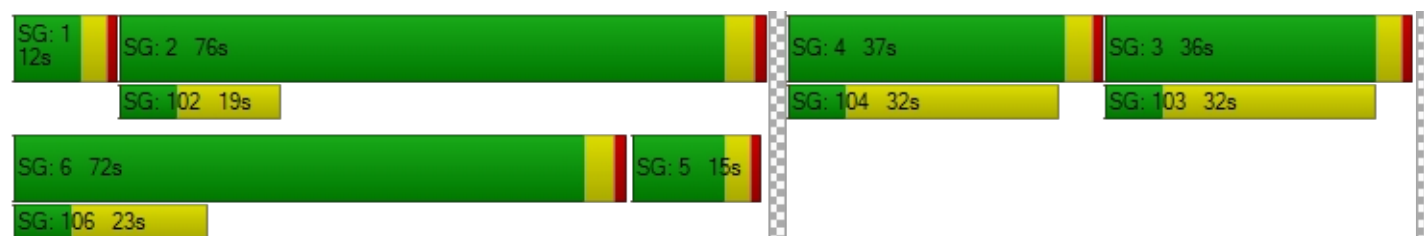
d_M, Delay for Movement [s/veh]	640.09	14.40	14.43	78.56	28.38	29.54	66.64	66.55	66.87	72.46	72.28	72.28
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	195.94			29.15			66.71			72.37		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	90.92											
Intersection LOS	F											
Intersection V/C	0.850											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.967			3.001			2.501			2.071		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.52			26.79			51.24			50.55		
I_b,int, Bicycle LOS Score for Intersection	2.464			2.777			2.871			2.008		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	991	73	2657	85	44	2437
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	991	73	2657	85	44	2437
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	253	19	678	22	11	622
Total Analysis Volume [veh/h]	1011	74	2711	87	45	2487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	93	93	93	93	93	93
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	4	58
g / C, Green / Cycle	0.27	0.27	0.54	0.54	0.04	0.62
(v / s)_i Volume / Saturation Flow Rate	0.29	0.05	0.54	0.05	0.02	0.50
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	926	432	2707	858	70	3070
d1, Uniform Delay [s]	34.25	26.29	21.75	10.70	44.33	13.71
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.91	0.07	5.26	0.02	3.72	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.09	0.17	1.00	0.10	0.65	0.81
d, Delay for Lane Group [s/veh]	77.16	26.36	27.01	10.72	48.04	13.90
Lane Group LOS	F	C	F	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.86	1.28	17.80	0.79	1.06	10.63
50th-Percentile Queue Length [ft/ln]	396.40	31.90	444.92	19.65	26.49	265.78
95th-Percentile Queue Length [veh/ln]	23.55	2.30	24.75	1.41	1.91	15.98
95th-Percentile Queue Length [ft/ln]	588.63	57.42	618.65	35.37	47.68	399.46

Movement, Approach, & Intersection Results

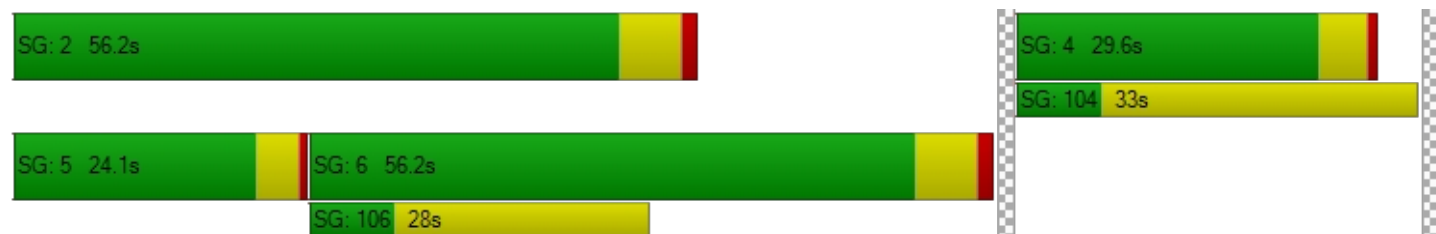
d_M, Delay for Movement [s/veh]	77.16	26.36	27.01	10.72	48.04	13.90
Movement LOS	F	C	F	B	D	B
d_A, Approach Delay [s/veh]	73.70		26.50		14.51	
Approach LOS	E		C		B	
d_I, Intersection Delay [s/veh]	29.75					
Intersection LOS	C					
Intersection V/C	0.943					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.36	36.36	36.36
I_p,int, Pedestrian LOS Score for Intersection	2.380	3.878	3.706
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	535	1070	1070
d_b, Bicycle Delay [s]	25.05	10.09	10.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.099	2.952
Bicycle LOS	A	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	151.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.523

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	472	78	349	50	8	308	159	3	58	15	238
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.0	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	472	78	349	50	8	308	159	3	58	15	238
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	118	20	87	13	2	77	40	1	15	4	60
Total Analysis Volume [veh/h]	0	472	78	349	50	8	308	159	3	58	15	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	20	20	30
g / C, Green / Cycle	0.33	0.33	0.33	0.22	0.22	0.33
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.99	0.19	0.10	0.34
s, saturation flow rate [veh/h]	1598	1468	412	1609	1680	904
c, Capacity [veh/h]	562	480	208	348	363	295
d1, Uniform Delay [s]	24.90	25.35	41.12	34.85	31.19	30.90
k, delay calibration	0.12	0.12	0.50	0.15	0.11	0.49
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.76	1.13	448.78	9.86	0.86	67.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.55	1.96	0.89	0.45	1.06
d, Delay for Lane Group [s/veh]	25.66	26.48	489.90	44.71	32.05	98.03
Lane Group LOS	C	C	F	D	C	F
Critical Lane Group	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.99	4.79	30.59	7.47	3.15	11.75
50th-Percentile Queue Length [ft/ln]	124.72	119.64	764.79	186.65	78.82	293.69
95th-Percentile Queue Length [veh/ln]	8.65	8.37	51.85	11.95	5.68	17.94
95th-Percentile Queue Length [ft/ln]	216.29	209.33	1296.36	298.68	141.88	448.57

Movement, Approach, & Intersection Results

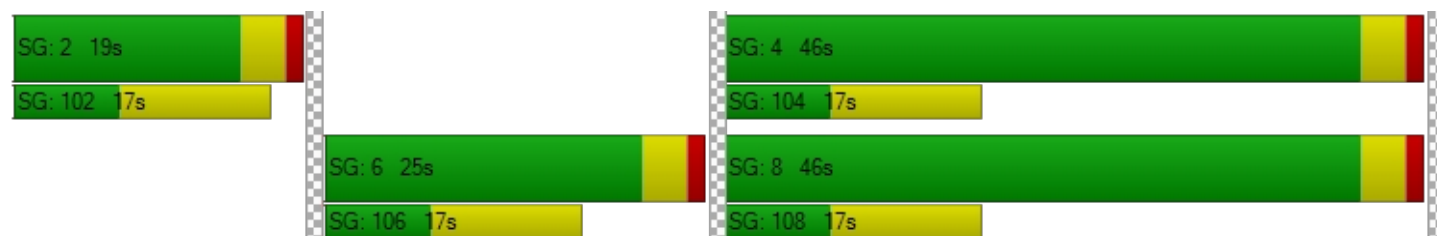
d_M, Delay for Movement [s/veh]	25.66	25.98	26.48	489.90	489.90	489.90	44.71	32.05	32.05	98.03	98.03	98.03
Movement LOS	C	C	C	F	F	F	D	C	C	F	F	F
d_A, Approach Delay [s/veh]	26.05			489.90			40.35			98.03		
Approach LOS	C			F			D			F		
d_I, Intersection Delay [s/veh]	151.42											
Intersection LOS	F											
Intersection V/C	1.523											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	35.56			35.56			35.56			35.56		
I_p,int, Pedestrian LOS Score for Intersection	2.156			2.404			2.101			2.649		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	915			915			457			327		
d_b, Bicycle Delay [s]	13.51			13.51			27.31			32.13		
I_b,int, Bicycle LOS Score for Intersection	2.013			2.231			2.335			2.073		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Two-way stop	Delay (sec / veh):	22.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.056

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	239	138	80	31	0	0	0	0	19	0	319
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	239	138	80	31	0	0	0	0	19	0	319
Peak Hour Factor	1.000	0.850	0.850	0.850	0.850	1.000	1.000	1.000	1.000	0.850	1.000	0.850
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	70	41	24	9	0	0	0	0	6	0	94
Total Analysis Volume [veh/h]	0	281	162	94	36	0	0	0	0	22	0	375
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.55
d_M, Delay for Movement [s/veh]	7.29	0.00	0.00	8.90	0.00	0.00	32.28	15.47	8.47	22.19	22.47	18.34
Movement LOS	A	A	A	A	A	A	D	C	A	C	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.30	0.30	0.30	0.00	0.00	0.00	4.09	4.09	4.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	7.61	7.61	7.61	0.00	0.00	0.00	102.18	102.18	102.18
d_A, Approach Delay [s/veh]	0.00			6.43			18.74			18.55		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	8.45											
Intersection LOS	C											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	37	133	0	0	18	32	230	5	60	2	0	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.0	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	133	0	0	18	32	230	5	60	2	0	14
Peak Hour Factor	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	41	0	0	5	10	70	2	18	1	0	4
Total Analysis Volume [veh/h]	45	162	0	0	22	39	280	6	73	2	0	17
Pedestrian Volume [ped/h]	31			0			1			34		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.00	0.00	0.46	0.01	0.08	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.39	0.00	0.00	8.89	0.00	0.00	17.16	17.77	15.03	12.70	11.76	9.50
Movement LOS	A	A	A	A	A	A	C	C	C	B	B	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.09	0.00	0.00	0.00	3.28	3.28	3.28	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	2.24	2.24	2.24	0.00	0.00	0.00	82.10	82.10	82.10	1.91	1.91	1.91
d_A, Approach Delay [s/veh]	1.61			0.00			16.74			9.83		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	10.11											
Intersection LOS	C											

Intersection Level Of Service Report

Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	113.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.220

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	782	555	2519	280	219	1941
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	782	555	2519	280	219	1941
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	210	149	677	75	59	522
Total Analysis Volume [veh/h]	841	597	2709	301	235	2087
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	97	97	97	97	97	97
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	67	67
g / C, Green / Cycle	0.21	0.21	0.52	0.52	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.28	0.43	0.60	0.21	0.68	0.47
s, saturation flow rate [veh/h]	3025	1389	4544	1421	348	4481
c, Capacity [veh/h]	625	287	2349	734	312	3096
d1, Uniform Delay [s]	38.37	38.16	23.37	14.28	27.83	8.65
k, delay calibration	0.15	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	158.38	497.52	69.52	0.14	15.48	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.34	2.08	1.15	0.41	0.75	0.67
d, Delay for Lane Group [s/veh]	196.75	535.69	92.89	14.41	43.31	8.74
Lane Group LOS	F	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	21.02	46.31	29.98	3.52	2.69	6.20
50th-Percentile Queue Length [ft/ln]	525.44	1157.66	749.47	87.98	67.21	154.99
95th-Percentile Queue Length [veh/ln]	32.74	73.92	43.27	6.33	4.84	10.28
95th-Percentile Queue Length [ft/ln]	818.53	1848.00	1081.63	158.36	120.98	257.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	196.75	535.69	92.89	14.41	43.31	8.74
Movement LOS	F	F	F	B	D	A
d_A, Approach Delay [s/veh]	337.46		85.04		12.24	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	113.69					
Intersection LOS	F					
Intersection V/C	1.220					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.96	37.96	37.96
I_p,int, Pedestrian LOS Score for Intersection	2.957	3.935	3.773
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	414	1034	1034
d_b, Bicycle Delay [s]	30.53	11.27	11.27
I_b,int, Bicycle LOS Score for Intersection	1.560	3.215	2.837
Bicycle LOS	A	C	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	201.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.503

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	90	484	27	131	346	51	325	21	602	270	18	678
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	484	27	131	346	51	325	21	602	270	18	678
Peak Hour Factor	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	26	138	8	37	98	14	92	6	171	77	5	193
Total Analysis Volume [veh/h]	102	550	31	149	393	58	369	24	684	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	31	0	18	39	0	0	38	38	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	9	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	6	32	9	35	34	83	39	39
g / C, Green / Cycle	0.05	0.25	0.07	0.27	0.26	0.64	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.35	0.05	0.29	0.40	0.49	0.43	0.47
s, saturation flow rate [veh/h]	1353	1674	2868	1581	988	1405	963	1442
c, Capacity [veh/h]	63	411	200	424	258	897	289	433
d1, Uniform Delay [s]	61.97	49.04	59.35	47.55	48.01	16.38	45.48	45.48
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	291.86	200.01	5.46	61.23	253.34	6.08	215.48	269.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.61	1.41	0.75	1.06	1.52	0.76	1.44	1.57
d, Delay for Lane Group [s/veh]	353.83	249.06	64.81	108.79	301.35	22.46	260.97	314.57
Lane Group LOS	F	F	E	F	F	C	F	F
Critical Lane Group	No	No	No	Yes	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.21	36.10	2.57	20.87	26.50	14.92	26.56	46.22
50th-Percentile Queue Length [ft/ln]	180.33	902.62	64.13	521.64	662.54	372.91	663.91	1155.57
95th-Percentile Queue Length [veh/ln]	12.87	54.60	4.62	29.43	42.39	21.25	42.04	71.70
95th-Percentile Queue Length [ft/ln]	321.71	1364.91	115.44	735.77	1059.75	531.25	1050.99	1792.55

Movement, Approach, & Intersection Results

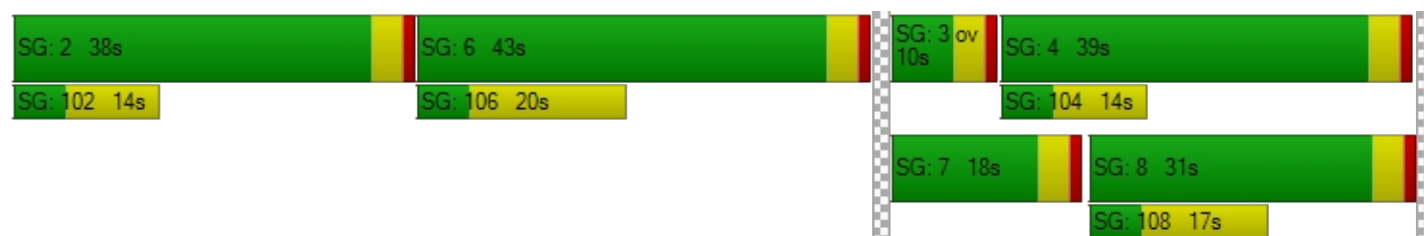
d_M, Delay for Movement [s/veh]	353.83	249.06	249.06	64.81	108.79	108.79	301.35	301.35	22.46	260.97	260.97	303.98
Movement LOS	F	F	F	E	F	F	F	F	C	F	F	F
d_A, Approach Delay [s/veh]	264.71			97.86			124.23			294.26		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	201.36											
Intersection LOS	F											
Intersection V/C	1.503											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.631	2.765	2.368	2.467
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	415	538	523	600
d_b, Bicycle Delay [s]	40.81	34.71	35.45	31.85
I_b,int, Bicycle LOS Score for Intersection	2.687	2.550	3.337	3.370
Bicycle LOS	B	B	C	C

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	159.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.398

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	195	95	1142	159	332	146	76	2269	402	559	846	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	195	95	1142	159	332	130	76	2269	296	559	846	34
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	50	24	294	41	86	34	20	585	76	144	218	9
Total Analysis Volume [veh/h]	201	98	1177	164	342	134	78	2339	305	576	872	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	14	15	43	9	10	10	5	40	40	23	58	58
g / C, Green / Cycle	0.13	0.14	0.40	0.08	0.10	0.10	0.05	0.37	0.37	0.22	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.11	0.07	0.64	0.09	0.21	0.09	0.03	0.46	0.21	0.17	0.18	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1457	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	236	207	738	146	155	140	119	1888	544	727	2688	875
d1, Uniform Delay [s]	45.57	42.67	32.19	49.36	48.68	48.03	50.41	33.82	26.84	39.83	13.71	11.55
k, delay calibration	0.13	0.11	0.50	0.37	0.46	0.36	0.11	0.11	0.12	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.85	1.68	274.41	101.07	564.31	53.46	6.00	108.61	0.98	2.00	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.47	1.60	1.12	2.21	0.95	0.66	1.24	0.56	0.79	0.32	0.04
d, Delay for Lane Group [s/veh]	55.42	44.35	306.60	150.43	612.99	101.49	56.41	142.43	27.81	41.83	13.78	11.57
Lane Group LOS	E	D	F	F	F	F	E	F	C	D	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	5.76	1.22	24.69	8.08	14.22	5.68	1.13	34.89	6.27	7.34	3.82	0.39
50th-Percentile Queue Length [ft/ln]	144.07	30.55	617.33	201.89	355.44	141.91	28.24	872.35	156.65	183.45	95.50	9.76
95th-Percentile Queue Length [veh/ln]	9.70	2.20	41.41	13.26	24.45	9.58	2.03	51.05	10.37	11.78	6.88	0.70
95th-Percentile Queue Length [ft/ln]	242.49	54.99	1035.34	331.51	611.36	239.59	50.83	1276.18	259.29	294.51	171.89	17.56

Movement, Approach, & Intersection Results

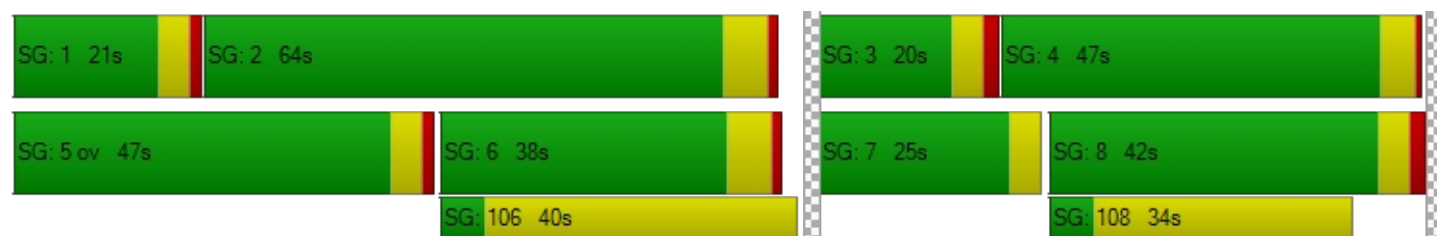
d_M, Delay for Movement [s/veh]	55.42	44.35	306.60	150.43	612.99	101.49	56.41	142.43	27.81	41.83	13.78	11.57
Movement LOS	E	D	F	F	F	F	E	F	C	D	B	B
d_A, Approach Delay [s/veh]	254.98			387.36			127.13			24.62		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	159.28											
Intersection LOS	F											
Intersection V/C	1.398											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.16	0.00	45.16	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.149	0.000	3.340	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	792	686	595	1078
d_b, Bicycle Delay [s]	19.63	23.25	26.55	11.42
I_b,int, Bicycle LOS Score for Intersection	2.777	2.101	3.115	2.375
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	141.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.166

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	65	1893	3766	18	359	957
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	1.50	2.40	16.10	4.90	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	65	1893	3766	18	359	957
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	483	961	5	92	244
Total Analysis Volume [veh/h]	66	1932	3843	18	366	977
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8		7		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	7		8		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	90	140	50	140
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	156	156	156	156	156	156
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	15	57	90	90	38	131
g / C, Green / Cycle	0.10	0.36	0.58	0.58	0.24	0.84
(v / s)_i Volume / Saturation Flow Rate	0.02	0.46	0.76	0.01	0.11	0.19
s, saturation flow rate [veh/h]	3264	4237	5077	1399	3378	5020
c, Capacity [veh/h]	314	1538	2926	806	815	4220
d1, Uniform Delay [s]	65.12	49.75	33.09	14.20	50.42	2.46
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	115.90	141.69	0.01	0.14	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	1.26	1.31	0.02	0.45	0.23
d, Delay for Lane Group [s/veh]	65.25	165.65	174.78	14.21	50.56	2.50
Lane Group LOS	E	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.22	36.23	71.39	0.26	5.95	1.18
50th-Percentile Queue Length [ft/ln]	30.52	905.79	1784.81	6.61	148.67	29.60
95th-Percentile Queue Length [veh/ln]	2.20	53.13	103.98	0.48	9.95	2.13
95th-Percentile Queue Length [ft/ln]	54.93	1328.30	2599.48	11.90	248.65	53.28

Movement, Approach, & Intersection Results

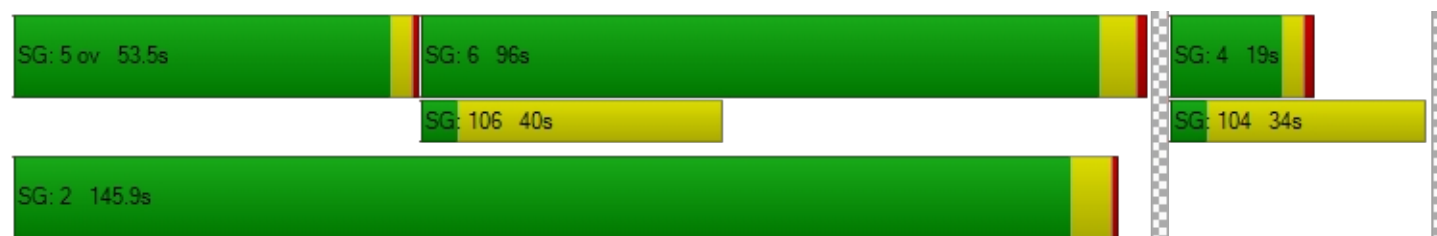
d_M, Delay for Movement [s/veh]	65.25	165.65	174.78	14.21	50.56	2.50
Movement LOS	E	F	F	B	D	A
d_A, Approach Delay [s/veh]	162.33		174.03		15.60	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	141.24					
Intersection LOS	F					
Intersection V/C	1.166					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.31	69.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.008	3.873	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	192	538	564
d_b, Bicycle Delay [s]	63.77	41.70	40.27
I_b,int, Bicycle LOS Score for Intersection	1.670	3.683	2.298
Bicycle LOS	A	D	B

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	298	0	0	74	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	298	0	0	74	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	75	0	0	19	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	298	0	0	74	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.16	11.45	9.86	11.16	11.45	8.64	7.36	0.00	0.00	7.85	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.82			10.42			0.00			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	301	72	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	301	72	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	75	18	0
Total Analysis Volume [veh/h]	0	0	0	301	72	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.73	8.64	7.36	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.68		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report**Intersection 18: North Driveway/Constitution Drive**

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	508	0	0	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	508	0	0	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	127	0	0	12
Total Analysis Volume [veh/h]	0	0	508	0	0	48
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.32	11.37	0.00	0.00	8.41	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.84		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_AM.vistro

Scenario 22 Cumulative (2040) plus Project AM

Report File: P:\...\2040+Proj AM.pdf

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.828	62.5	E
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	1.118	62.2	E
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.919	22.4	C
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	EB Left	0.842	31.8	C
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	EB Left	1.225	64.8	E
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.922	49.1	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.839	60.4	E
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.762	12.8	B
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.650	342.1	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	EB Left	0.295	117.8	F
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Left	0.686	60.5	F
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.182	71.9	E
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	SB Right	0.859	87.6	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	1.171	186.6	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NB Left	0.779	13.3	B
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.010	11.2	B
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.016	10.8	B

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	NB Right	0.202	17.6	C
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 62.5
 Level Of Service: E
 Volume to Capacity (v/c): 0.828

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	162	27	1389	10	30	7	8	532	296	2035	702	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	59	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1389	10	30	7	8	535	296	2094	710	34
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	42	7	362	3	8	2	2	139	77	545	185	9
Total Analysis Volume [veh/h]	169	28	1447	10	31	7	8	557	308	2181	740	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.01	0.01	0.18	0.18	0.21	0.43	0.43
s, saturation flow rate [veh/h]	1822	4123	1863	1610	1625	1480	1438	5075	1806
c, Capacity [veh/h]	114	2272	339	293	319	290	282	2534	901
d1, Uniform Delay [s]	74.97	24.78	54.28	54.32	63.19	63.19	63.68	35.18	35.16
k, delay calibration	0.50	0.50	0.04	0.04	0.41	0.41	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	358.76	1.38	0.03	0.04	30.51	32.46	80.28	4.12	10.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.72	0.64	0.07	0.08	0.93	0.93	1.09	0.86	0.86
d, Delay for Lane Group [s/veh]	433.73	26.16	54.31	54.36	93.70	95.66	143.96	39.31	45.66
Lane Group LOS	F	C	D	D	F	F	F	D	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	16.14	12.95	0.86	0.78	14.57	13.43	17.71	25.65	28.92
50th-Percentile Queue Length [ft/ln]	403.44	323.79	21.43	19.47	364.20	335.82	442.65	641.15	722.91
95th-Percentile Queue Length [veh/ln]	26.06	18.85	1.54	1.40	20.83	19.44	25.78	33.95	37.74
95th-Percentile Queue Length [ft/ln]	651.50	471.34	38.58	35.04	520.69	486.09	644.44	848.78	943.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	433.73	433.73	26.16	54.31	54.34	54.36	93.70	94.65	143.96	39.31	45.66	45.66
Movement LOS	F	F	C	D	D	D	F	F	F	D	D	D
d_A, Approach Delay [s/veh]	75.00			54.33			112.04			40.97		
Approach LOS	E			D			F			D		
d_I, Intersection Delay [s/veh]	62.46											
Intersection LOS	E											
Intersection V/C	0.828											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.596			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.76			54.89			52.33			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.272			1.599			2.280			6.437		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	62.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.118

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1854	0	0	866	771	1251
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	0	0	30	0	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1865	0	0	896	771	1256
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	481	0	0	231	199	324
Total Analysis Volume [veh/h]	1923	0	0	924	795	1295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.55	0.27	0.23	0.47
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	14.73	9.01	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.24
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.91	0.71	0.23	155.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.45	0.66	1.34
d, Delay for Lane Group [s/veh]	23.64	9.72	22.10	181.58
Lane Group LOS	C	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.72	4.07	6.00	29.52
50th-Percentile Queue Length [ft/ln]	393.07	101.80	149.89	738.03
95th-Percentile Queue Length [veh/ln]	22.23	7.33	10.01	45.37
95th-Percentile Queue Length [ft/ln]	555.64	183.25	250.29	1134.13

Movement, Approach, & Intersection Results

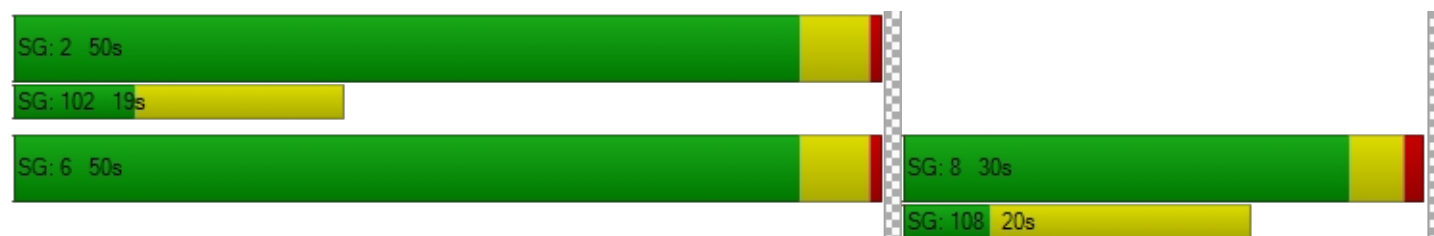
d_M, Delay for Movement [s/veh]	23.64	0.00	0.00	9.72	22.10	181.58
Movement LOS	C			A	C	F
d_A, Approach Delay [s/veh]	23.64		9.72		120.92	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	62.22					
Intersection LOS	E					
Intersection V/C	1.118					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.136	2.634
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	3.146	2.322	1.560
Bicycle LOS	C	B	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	22.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1036	1451	217	1360	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	11	0	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1038	1462	217	1369	551
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	373	54	349	141
Total Analysis Volume [veh/h]	0	1059	1492	217	1397	562
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.26	0.42	0.41	0.20
s, saturation flow rate [veh/h]	4000	3515	3373	2782
c, Capacity [veh/h]	2121	1772	1394	1150
d1, Uniform Delay [s]	11.98	17.07	23.43	17.23
k, delay calibration	0.50	0.50	0.06	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	5.06	8.57	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.84	1.00	0.49
d, Delay for Lane Group [s/veh]	12.82	22.13	32.01	17.35
Lane Group LOS	B	C	F	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.51	11.47	13.72	3.59
50th-Percentile Queue Length [ft/ln]	137.79	286.87	343.02	89.86
95th-Percentile Queue Length [veh/ln]	9.36	17.03	19.83	6.47
95th-Percentile Queue Length [ft/ln]	234.04	425.75	495.67	161.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.82	22.13	0.00	32.01	17.35
Movement LOS		B	C		F	B
d_A, Approach Delay [s/veh]	12.82		22.13		27.80	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	22.41					
Intersection LOS	C					
Intersection V/C	0.919					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	3.012	0.000	2.672
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.433	2.791	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	42	1319	7	447	1215	346	355	20	0	13	4	68
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	1.70	0.00	0.00	0.00	0.00	12.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	2	0	1	10	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	42	1321	7	448	1225	346	355	20	0	13	4	9
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	12	367	2	124	340	96	99	6	0	4	1	3
Total Analysis Volume [veh/h]	47	1468	8	498	1361	384	394	22	0	14	4	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			1			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	96	96	112	102	102	35	35	7	7
g / C, Green / Cycle	0.05	0.60	0.60	0.70	0.64	0.64	0.22	0.22	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.49	0.47	0.51	0.22	0.01	0.01	0.00
s, saturation flow rate [veh/h]	1758	3532	1849	1018	1840	1707	1785	1900	1829	2555
c, Capacity [veh/h]	82	2122	1111	693	1177	1092	390	415	82	115
d1, Uniform Delay [s]	74.70	17.56	17.56	16.62	19.72	21.21	62.47	49.38	73.64	73.20
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.71	1.35	6.33	4.22	6.12	47.90	0.04	0.98	0.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.46	0.46	0.72	0.74	0.80	1.01	0.05	0.22	0.09
d, Delay for Lane Group [s/veh]	79.39	18.27	18.92	22.95	23.95	27.33	110.37	49.42	74.62	73.44
Lane Group LOS	E	B	B	C	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.00	9.97	10.64	3.85	22.77	24.86	21.21	0.72	0.75	0.20
50th-Percentile Queue Length [ft/ln]	50.05	249.18	266.01	96.18	569.21	621.40	530.25	17.95	18.64	5.09
95th-Percentile Queue Length [veh/ln]	3.60	15.14	15.99	6.93	30.59	33.03	28.92	1.29	1.34	0.37
95th-Percentile Queue Length [ft/ln]	90.09	378.62	399.75	173.13	764.85	825.80	723.06	32.31	33.55	9.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	79.39	18.49	18.92	22.95	25.16	27.33	110.37	49.42	49.42	74.62	74.62	73.44
Movement LOS	E	B	B	C	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	20.37			25.04			107.14			74.20		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	31.79											
Intersection LOS	C											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.43			68.43			69.35			69.35		
I_p,int, Pedestrian LOS Score for Intersection	3.092			3.299			2.198			2.946		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.61			28.18			50.54			47.41		
I_b,int, Bicycle LOS Score for Intersection	2.397			3.410			2.246			1.703		
Bicycle LOS	B			C			B			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Marsh Rd/Bay Rd

Control Type:	Signalized	Delay (sec / veh):	64.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.225

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	838	82	425	749	47	338	69	2	48	57	339
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	6	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	839	82	425	755	47	338	69	2	48	57	339
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	214	21	108	193	12	86	18	1	12	15	86
Total Analysis Volume [veh/h]	0	856	84	434	770	48	345	70	2	49	58	346
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			5			0			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			1			1			1		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			12			9			2		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	30	30
g / C, Green / Cycle	0.33	0.33	0.20	0.57	0.57	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.25	0.23	0.23	0.64	0.26
s, saturation flow rate [veh/h]	1882	1656	1708	1807	1763	648	1712
c, Capacity [veh/h]	669	549	343	1030	1005	323	688
d1, Uniform Delay [s]	24.41	24.42	32.07	9.62	9.64	31.07	21.91
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.46	11.69	129.85	1.16	1.21	151.45	3.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.80	1.26	0.40	0.40	1.29	0.66
d, Delay for Lane Group [s/veh]	31.87	36.11	161.92	10.79	10.84	182.52	25.29
Lane Group LOS	C	D	F	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.40	8.84	18.68	3.80	3.74	19.95	7.56
50th-Percentile Queue Length [ft/ln]	234.97	220.99	467.07	94.97	93.56	498.71	189.10
95th-Percentile Queue Length [veh/ln]	14.43	13.72	28.83	6.84	6.74	31.55	12.07
95th-Percentile Queue Length [ft/ln]	360.67	342.89	720.64	170.94	168.42	788.72	301.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.87	33.63	36.11	161.92	10.81	10.84	182.52	182.52	182.52	25.29	25.29	25.29
Movement LOS	C	C	D	F	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	33.86			63.20			182.52			25.29		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	64.83											
Intersection LOS	E											
Intersection V/C	1.225											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.82			29.82			29.82			19.73		
I_p,int, Pedestrian LOS Score for Intersection	2.695			3.421			1.921			2.199		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.73			8.70			17.50			17.44		
I_b,int, Bicycle LOS Score for Intersection	2.335			2.593			2.248			2.307		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	49.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.922

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	495	278	427	395	359	538
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	3.00	2.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	1	0	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	500	37	427	395	359	112
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	10	112	104	94	29
Total Analysis Volume [veh/h]	526	39	449	416	378	118
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	3		0		2	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	2		0		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		23		22	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	26	53	21	17	17	17
g / C, Green / Cycle	0.34	0.68	0.27	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.31	0.03	0.25	0.22	0.20	0.08
s, saturation flow rate [veh/h]	1724	1559	1781	1870	1885	1524
c, Capacity [veh/h]	579	1055	489	407	411	332
d1, Uniform Delay [s]	24.76	4.17	27.47	30.53	29.87	25.80
k, delay calibration	0.08	0.04	0.30	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.43	0.01	17.22	50.18	28.38	2.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.04	0.92	1.02	0.92	0.36
d, Delay for Lane Group [s/veh]	29.19	4.18	44.69	80.71	58.26	28.76
Lane Group LOS	C	A	D	F	E	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.41	0.17	10.04	12.99	9.88	2.06
50th-Percentile Queue Length [ft/ln]	235.37	4.15	251.00	324.67	246.90	51.57
95th-Percentile Queue Length [veh/ln]	14.45	0.30	15.24	19.12	15.03	3.71
95th-Percentile Queue Length [ft/ln]	361.18	7.48	380.91	478.02	375.75	92.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.19	4.18	44.69	80.71	58.26	28.76
Movement LOS	C	A	D	F	E	C
d_A, Approach Delay [s/veh]	27.46		62.02		51.24	
Approach LOS	C		E		D	
d_I, Intersection Delay [s/veh]	49.10					
Intersection LOS	D					
Intersection V/C	0.922					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.89	0.00	44.34
I_p,int, Pedestrian LOS Score for Intersection	2.905	0.000	3.163
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	128	513	513
d_b, Bicycle Delay [s]	34.15	21.78	21.77
I_b,int, Bicycle LOS Score for Intersection	1.560	2.987	3.083
Bicycle LOS	A	C	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	60.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	228	973	126	29	1008	409	628	77	230	38	22	25
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	0	0	6	4	1	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	228	974	126	29	1014	413	629	77	215	38	22	25
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	59	251	32	7	261	106	162	20	55	10	6	6
Total Analysis Volume [veh/h]	235	1004	130	30	1045	426	648	79	222	39	23	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	95	95	5	88	88	39	39	39	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.55	0.55	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.42	0.43	0.21	0.21	0.15	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	1823	1648	1717	1706	1527	1439	1214
c, Capacity [veh/h]	142	1120	1070	58	1003	907	419	416	372	107	91
d1, Uniform Delay [s]	73.44	18.72	18.83	75.88	27.77	28.38	58.10	57.96	53.30	70.35	71.32
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.18	0.18	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	322.04	1.69	1.81	2.58	5.40	6.67	9.32	8.64	1.14	1.52	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.65	0.51	0.52	0.51	0.76	0.78	0.88	0.87	0.60	0.36	0.54
d, Delay for Lane Group [s/veh]	395.48	20.41	20.64	78.45	33.17	35.05	67.43	66.60	54.44	71.87	75.00
Lane Group LOS	F	C	C	E	C	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.58	12.85	12.52	1.26	23.62	22.70	15.48	15.14	8.12	1.59	2.06
50th-Percentile Queue Length [ft/ln]	464.41	321.34	313.08	31.42	590.42	567.52	387.11	378.45	203.06	39.66	51.39
95th-Percentile Queue Length [veh/ln]	29.63	18.73	18.33	2.26	31.59	30.51	21.94	21.52	12.80	2.86	3.70
95th-Percentile Queue Length [ft/ln]	740.87	468.34	458.18	56.56	789.67	762.86	548.45	537.97	319.90	71.40	92.51

Movement, Approach, & Intersection Results

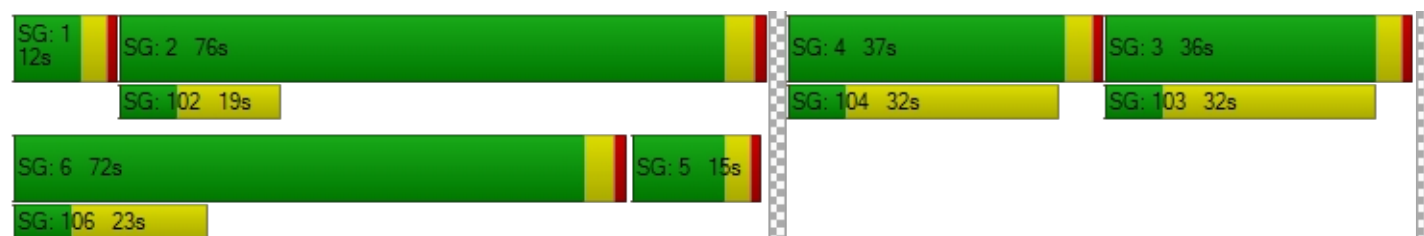
d_M, Delay for Movement [s/veh]	395.48	20.51	20.64	78.45	33.68	35.05	67.07	66.60	54.44	71.87	75.00	75.00
Movement LOS	F	C	C	E	C	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	84.89			34.96			64.08			73.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	60.40											
Intersection LOS	E											
Intersection V/C	0.839											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.990			3.083			2.514			2.056		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.689			2.798			3.150			1.705		
Bicycle LOS	B			C			C			A		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	375	65	1889	456	156	2299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	67	28	0	3	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	442	93	1889	459	164	2299
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	24	487	118	42	593
Total Analysis Volume [veh/h]	456	96	1947	473	169	2370
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	9	9	22	22	6	32
g / C, Green / Cycle	0.18	0.18	0.42	0.42	0.12	0.61
(v / s)_i Volume / Saturation Flow Rate	0.14	0.06	0.39	0.32	0.09	0.47
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	564	268	2071	623	215	3091
d1, Uniform Delay [s]	20.59	18.83	14.56	12.82	22.32	7.31
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.07	0.30	1.05	0.72	2.39	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.36	0.94	0.76	0.79	0.77
d, Delay for Lane Group [s/veh]	21.66	19.13	15.61	13.54	24.71	7.46
Lane Group LOS	C	B	B	B	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.54	0.97	5.39	3.45	1.85	3.03
50th-Percentile Queue Length [ft/ln]	63.50	24.20	134.72	86.36	46.29	75.86
95th-Percentile Queue Length [veh/ln]	4.57	1.74	9.20	6.22	3.33	5.46
95th-Percentile Queue Length [ft/ln]	114.30	43.56	229.90	155.44	83.32	136.55

Movement, Approach, & Intersection Results

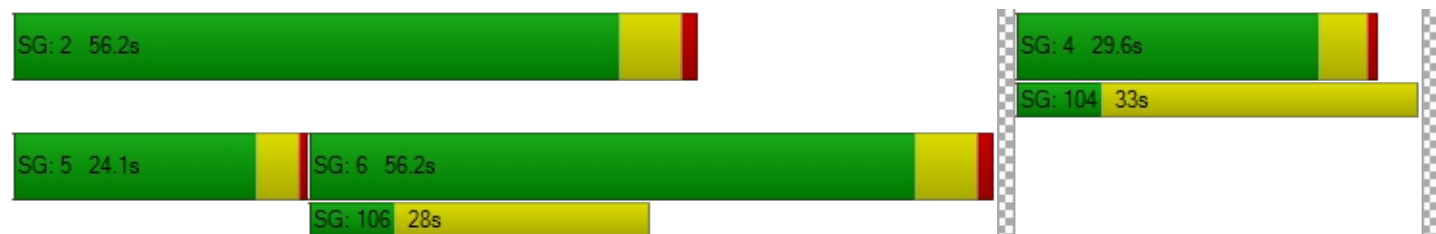
d_M, Delay for Movement [s/veh]	21.66	19.13	15.61	13.54	24.71	7.46
Movement LOS	C	B	B	B	C	A
d_A, Approach Delay [s/veh]	21.22		15.21		8.61	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	12.77					
Intersection LOS	B					
Intersection V/C	0.762					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.17	16.17	16.17
I_p,int, Pedestrian LOS Score for Intersection	2.343	3.653	3.520
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	961	1922	1922
d_b, Bicycle Delay [s]	7.02	0.04	0.04
I_b,int, Bicycle LOS Score for Intersection	1.560	2.891	2.956
Bicycle LOS	A	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	342.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.650

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	228	23	181	358	77	123	310	344	38	63	190
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	17.90	100.0	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	2	0	3	8	69	4	2	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	255	25	181	361	85	192	314	346	39	64	190
Peak Hour Factor	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900	0.900
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	71	7	50	100	24	53	87	96	11	18	53
Total Analysis Volume [veh/h]	0	283	28	201	401	94	213	349	384	43	71	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.87	0.16	0.47	0.31
s, saturation flow rate [veh/h]	1371	1289	804	1357	1552	1043
c, Capacity [veh/h]	439	380	282	399	457	306
d1, Uniform Delay [s]	28.44	28.75	42.84	30.09	35.95	35.99
k, delay calibration	0.11	0.11	0.50	0.11	0.50	0.49
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.50	0.68	670.62	1.11	281.96	68.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.40	2.47	0.53	1.60	1.06
d, Delay for Lane Group [s/veh]	28.94	29.43	713.45	31.20	317.91	104.34
Lane Group LOS	C	C	F	C	F	F
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.11	3.02	59.74	4.44	46.86	13.23
50th-Percentile Queue Length [ft/ln]	77.69	75.54	1493.38	111.09	1171.55	330.65
95th-Percentile Queue Length [veh/ln]	5.59	5.44	97.93	7.90	72.92	19.88
95th-Percentile Queue Length [ft/ln]	139.84	135.96	2448.27	197.51	1822.94	497.07

Movement, Approach, & Intersection Results

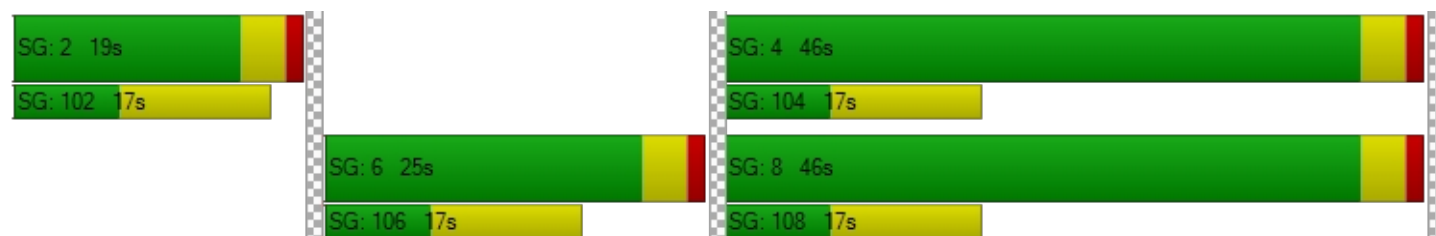
d_M, Delay for Movement [s/veh]	28.94	29.16	29.43	713.45	713.45	713.45	31.20	317.91	317.91	104.34	104.34	104.34
Movement LOS	C	C	C	F	F	F	C	F	F	F	F	F
d_A, Approach Delay [s/veh]	29.18			713.45			253.36			104.34		
Approach LOS	C			F			F			F		
d_I, Intersection Delay [s/veh]	342.06											
Intersection LOS	F											
Intersection V/C	1.650											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	40.56			40.56			40.56			40.56		
I_p,int, Pedestrian LOS Score for Intersection	2.316			2.402			2.307			2.447		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	824			824			412			294		
d_b, Bicycle Delay [s]	17.62			17.62			32.13			37.07		
I_b,int, Bicycle LOS Score for Intersection	1.816			2.708			3.121			2.096		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway

Control Type:	Two-way stop	Delay (sec / veh):	117.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.295

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	105	105	442	303	0	0	0	0	27	0	159
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	0	0	1	4	13	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	121	105	442	304	4	13	0	0	27	0	159
Peak Hour Factor	1.000	0.910	0.910	0.910	0.910	1.000	1.000	1.000	1.000	0.910	1.000	0.910
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	33	29	121	84	1	3	0	0	7	0	44
Total Analysis Volume [veh/h]	0	133	115	486	334	4	13	0	0	30	0	175
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.37	0.00	0.00	0.29	0.00	0.00	0.46	0.00	0.22
d_M, Delay for Movement [s/veh]	7.95	0.00	0.00	9.34	0.00	0.00	117.77	94.75	41.20	81.48	80.66	30.85
Movement LOS	A	A	A	A	A	A	F	F	E	F	F	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	1.73	1.73	1.73	1.00	1.00	1.00	4.55	4.55	4.55
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	43.31	43.31	43.31	24.96	24.96	24.96	113.64	113.64	113.64
d_A, Approach Delay [s/veh]	0.00			5.51			117.77			38.26		
Approach LOS	A			A			F			E		
d_I, Intersection Delay [s/veh]	10.79											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 60.5
 Level Of Service: F
 Volume to Capacity (v/c): 0.686

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	32	49	3	30	137	163	104	1	45	18	7	57
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.0	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	49	3	30	137	164	120	1	45	18	7	57
Peak Hour Factor	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720	0.720
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	17	1	10	48	57	42	0	16	6	2	20
Total Analysis Volume [veh/h]	44	68	4	42	190	228	167	1	63	25	10	79
Pedestrian Volume [ped/h]	70			0			137			17		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.00	0.00	0.04	0.00	0.00	0.69	0.00	0.14	0.10	0.04	0.08
d_M, Delay for Movement [s/veh]	9.25	0.00	0.00	8.58	0.00	0.00	60.50	58.60	53.63	20.60	21.87	10.67
Movement LOS	A	A	A	A	A	A	F	F	F	C	C	B
95th-Percentile Queue Length [veh/ln]	0.16	0.16	0.16	0.13	0.13	0.13	6.78	6.78	6.78	0.83	0.83	0.83
95th-Percentile Queue Length [ft/ln]	3.89	3.89	3.89	3.13	3.13	3.13	169.50	169.50	169.50	20.66	20.66	20.66
d_A, Approach Delay [s/veh]	3.51			0.78			58.62			13.83		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	17.25											
Intersection LOS	F											

Intersection Level Of Service Report

Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	71.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.182

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	284	283	1741	813	616	2152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	28	0	0	8
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	284	283	1769	813	616	2160
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	75	74	466	214	162	568
Total Analysis Volume [veh/h]	299	298	1862	856	648	2274
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	79	79
g / C, Green / Cycle	0.18	0.18	0.46	0.46	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.42	0.61	1.10	0.50
s, saturation flow rate [veh/h]	3078	1188	4470	1393	590	4518
c, Capacity [veh/h]	565	218	2051	639	487	3279
d1, Uniform Delay [s]	40.24	44.50	27.37	29.50	38.06	8.26
k, delay calibration	0.04	0.50	0.04	0.50	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	191.57	0.68	163.38	161.86	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	1.37	0.91	1.34	1.33	0.69
d, Delay for Lane Group [s/veh]	40.53	236.07	28.05	192.88	199.92	8.36
Lane Group LOS	D	F	C	F	F	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.64	17.43	13.53	43.86	25.29	7.26
50th-Percentile Queue Length [ft/ln]	90.96	435.83	338.21	1096.45	632.24	181.61
95th-Percentile Queue Length [veh/ln]	6.55	27.78	19.56	66.02	40.95	11.68
95th-Percentile Queue Length [ft/ln]	163.74	694.49	489.01	1650.56	1023.83	292.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.53	236.07	28.05	192.88	199.92	8.36
Movement LOS	D	F	C	F	F	A
d_A, Approach Delay [s/veh]	138.14		79.96		50.84	
Approach LOS	F		E		D	
d_I, Intersection Delay [s/veh]	71.89					
Intersection LOS	E					
Intersection V/C	1.182					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.06	44.06	44.06
I_p,int, Pedestrian LOS Score for Intersection	3.243	3.809	3.665
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	917	917
d_b, Bicycle Delay [s]	36.33	15.97	15.97
I_b,int, Bicycle LOS Score for Intersection	1.560	3.055	3.167
Bicycle LOS	A	C	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	87.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	272	356	196	766	348	423	80	10	111	42	24	84
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	0	0	0	0	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	356	196	766	348	423	80	10	116	42	24	84
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	70	91	50	195	89	108	20	3	30	11	6	21
Total Analysis Volume [veh/h]	280	363	200	782	355	432	82	10	118	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	20	37	0	20	37	0	0	24	24	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	20	34	29	42	11	50	10	10
g / C, Green / Cycle	0.20	0.34	0.29	0.42	0.11	0.50	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.18	0.40	0.25	0.52	0.08	0.11	0.08	0.06
s, saturation flow rate [veh/h]	1572	1397	3105	1517	1120	1103	869	1372
c, Capacity [veh/h]	316	476	888	646	129	545	144	135
d1, Uniform Delay [s]	38.84	32.96	34.08	28.72	42.67	14.30	44.32	43.35
k, delay calibration	0.15	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.11	101.84	3.06	111.93	7.16	0.20	2.39	4.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	1.18	0.88	1.22	0.71	0.22	0.47	0.63
d, Delay for Lane Group [s/veh]	49.96	134.80	37.14	140.64	49.83	14.50	46.71	48.13
Lane Group LOS	D	F	D	F	D	B	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	7.55	24.63	9.24	34.81	2.43	1.50	1.73	2.18
50th-Percentile Queue Length [ft/ln]	188.87	615.76	230.95	870.25	60.79	37.50	43.34	54.61
95th-Percentile Queue Length [veh/ln]	12.06	36.33	14.22	50.76	4.38	2.70	3.12	3.93
95th-Percentile Queue Length [ft/ln]	301.56	908.32	355.57	1269.02	109.41	67.50	78.02	98.30

Movement, Approach, & Intersection Results

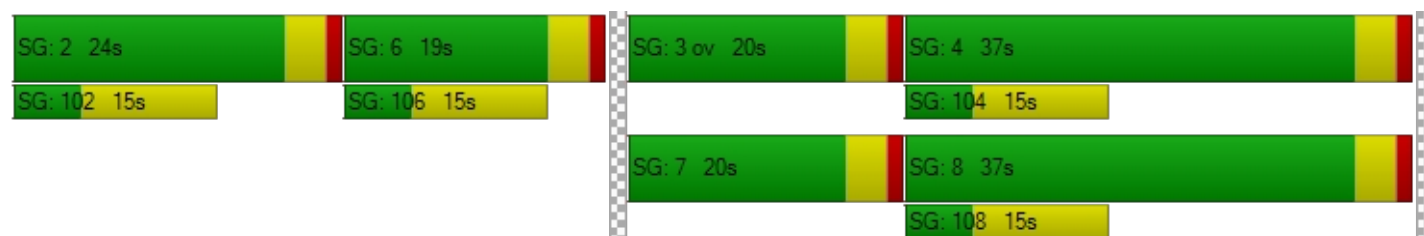
d_M, Delay for Movement [s/veh]	49.96	134.80	134.80	37.14	140.64	140.64	49.83	49.83	14.50	46.71	46.71	48.00
Movement LOS	D	F	F	D	F	F	D	D	B	D	D	D
d_A, Approach Delay [s/veh]	106.62			89.06			29.98			47.50		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	87.63											
Intersection LOS	F											
Intersection V/C	0.859											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.41	41.41	41.41	41.41
I_p,int, Pedestrian LOS Score for Intersection	2.450	2.716	2.254	2.417
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	660	660	400	300
d_b, Bicycle Delay [s]	22.45	22.45	32.00	36.13
I_b,int, Bicycle LOS Score for Intersection	2.951	4.148	1.906	1.812
Bicycle LOS	C	D	A	A

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	186.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.171

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	250	596	277	38	76	72	391	420	226	1160	2508	72
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	0	19	9	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	253	596	277	38	76	56	391	439	129	1160	2513	72
Peak Hour Factor	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980	0.980
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	65	152	71	10	19	14	100	112	33	296	641	18
Total Analysis Volume [veh/h]	258	608	283	39	78	57	399	448	132	1184	2564	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	20	19	48	9	9	9	16	41	41	25	50	50
g / C, Green / Cycle	0.17	0.17	0.42	0.08	0.08	0.08	0.14	0.36	0.36	0.22	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.16	0.39	0.16	0.03	0.06	0.05	0.12	0.09	0.09	0.36	0.51	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1077	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	285	259	746	100	97	85	478	1774	525	729	2200	708
d1, Uniform Delay [s]	46.30	47.61	22.61	49.94	51.67	51.04	47.69	25.68	25.67	44.55	32.05	18.86
k, delay calibration	0.31	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.29	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.74	618.14	0.32	2.44	14.14	8.74	3.89	0.07	0.25	284.41	75.73	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	2.35	0.38	0.39	0.80	0.67	0.83	0.25	0.25	1.62	1.17	0.10
d, Delay for Lane Group [s/veh]	70.04	665.75	22.93	52.37	65.81	59.79	51.58	25.76	25.92	328.96	107.78	18.92
Lane Group LOS	E	F	C	D	E	E	D	C	C	F	F	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.87	25.82	1.70	1.14	1.30	1.81	5.76	2.87	2.56	39.00	34.87	1.15
50th-Percentile Queue Length [ft/ln]	221.84	645.57	42.49	28.59	32.60	45.35	143.98	71.69	63.97	975.00	871.67	28.78
95th-Percentile Queue Length [veh/ln]	13.76	43.14	3.06	2.06	2.35	3.27	9.69	5.16	4.61	60.63	49.61	2.07
95th-Percentile Queue Length [ft/ln]	343.97	1078.47	76.47	51.46	58.68	81.63	242.37	129.03	115.14	1515.63	1240.25	51.81

Movement, Approach, & Intersection Results

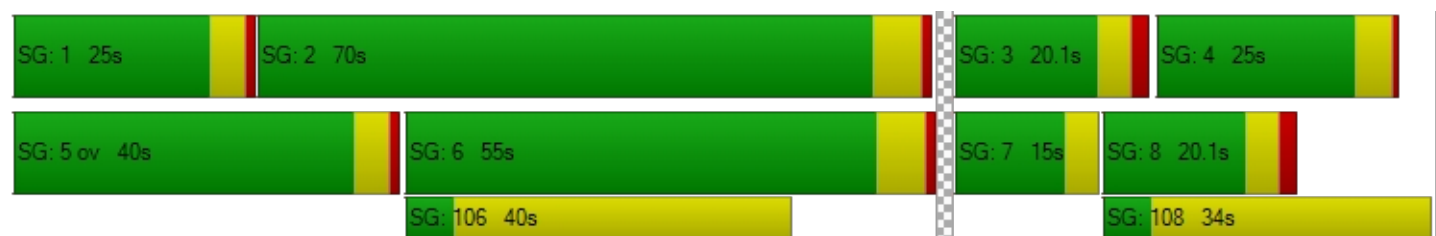
d_M, Delay for Movement [s/veh]	70.04	665.75	22.93	52.37	65.81	59.79	51.58	25.76	25.92	328.96	107.78	18.92
Movement LOS	E	F	C	D	E	E	D	C	C	F	F	B
d_A, Approach Delay [s/veh]	373.66			60.83			36.30			174.62		
Approach LOS	F			E			D			F		
d_I, Intersection Delay [s/veh]	186.62											
Intersection LOS	F											
Intersection V/C	1.171											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.36	0.00	48.36	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.140	0.000	3.340	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	361	263	860	1123
d_b, Bicycle Delay [s]	38.27	42.99	18.53	10.97
I_b,int, Bicycle LOS Score for Intersection	2.508	1.716	2.156	3.661
Bicycle LOS	B	A	B	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	240	416	842	63	1319	2951
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	3.60	5.40	3.50	1.60	3.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	0	15	4	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	241	416	857	67	1319	2955
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	107	221	17	340	762
Total Analysis Volume [veh/h]	248	429	884	69	1360	3046
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	7		6		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	6		7		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	35	110	75	110
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	8	45	21	21	33	57
g / C, Green / Cycle	0.11	0.60	0.28	0.28	0.44	0.76
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.18	0.04	0.39	0.60
s, saturation flow rate [veh/h]	3453	4166	4955	1548	3470	5049
c, Capacity [veh/h]	379	2494	1363	426	1513	3831
d1, Uniform Delay [s]	32.15	6.76	24.08	20.69	19.70	5.52
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	0.01	0.63	0.21	0.84	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.17	0.65	0.16	0.90	0.80
d, Delay for Lane Group [s/veh]	32.87	6.77	24.71	20.91	20.54	5.99
Lane Group LOS	C	A	C	C	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.11	0.84	4.07	0.83	8.86	2.78
50th-Percentile Queue Length [ft/ln]	52.68	21.09	101.73	20.70	221.53	69.46
95th-Percentile Queue Length [veh/ln]	3.79	1.52	7.32	1.49	13.74	5.00
95th-Percentile Queue Length [ft/ln]	94.82	37.96	183.12	37.26	343.57	125.03

Movement, Approach, & Intersection Results

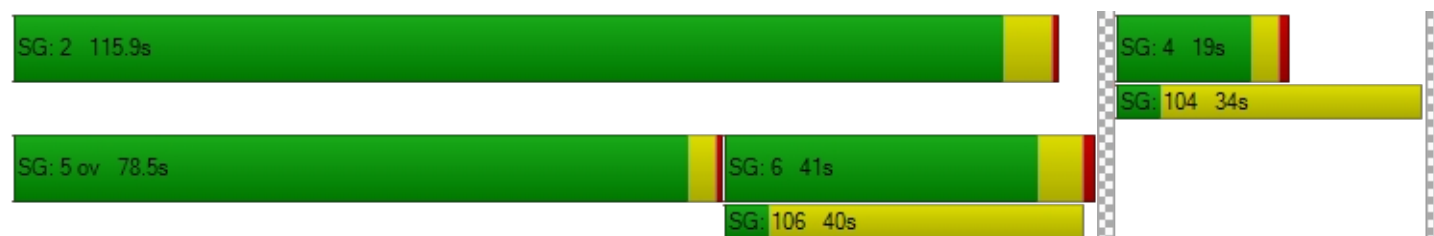
d_M, Delay for Movement [s/veh]	32.87	6.77	24.71	20.91	20.54	5.99
Movement LOS	C	A	C	C	C	A
d_A, Approach Delay [s/veh]	16.33		24.44		10.48	
Approach LOS	B		C		B	
d_I, Intersection Delay [s/veh]	13.34					
Intersection LOS	B					
Intersection V/C	0.779					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.14	29.14	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.929	3.671	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	399	931	372
d_b, Bicycle Delay [s]	24.10	10.75	24.92
I_b,int, Bicycle LOS Score for Intersection	1.670	2.084	3.983
Bicycle LOS	A	B	D

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.010

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	165	0	0	203	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	6	0	0	1	2	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	6	0	0	1	167	0	0	203	0
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	2	0	0	0	42	0	0	51	0
Total Analysis Volume [veh/h]	0	0	0	6	0	0	1	167	0	0	203	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.16	11.46	9.10	11.22	11.52	9.36	7.63	0.00	0.00	7.55	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.03	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.78	0.78	0.78	0.05	0.05	0.05	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.57			11.22			0.05			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.20											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	161	203	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	0	2	6	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	0	2	167	203	1
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	1	42	51	0
Total Analysis Volume [veh/h]	10	0	2	167	203	1
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.85	9.39	7.64	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.22	1.22	0.11	0.11	0.00	0.00
d_A, Approach Delay [s/veh]	10.85		0.09		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.32					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.202

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	850	0	0	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	72	2	12	9	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	72	852	12	9	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	213	3	2	37
Total Analysis Volume [veh/h]	0	72	852	12	9	149
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.20	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	21.54	17.64	0.00	0.00	9.68	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.74	0.74	0.00	0.00	0.04	0.04
95th-Percentile Queue Length [ft/ln]	18.59	18.59	0.00	0.00	0.88	0.88
d_A, Approach Delay [s/veh]	17.64		0.00		0.55	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.24					
Intersection LOS	C					

123 Independence Drive Project

Vistro File: P:\...\123
Independence_DUDEK_Base3_PM.vistro

Scenario 22 Cumulative (2040) plus Project PM

Report File: P:\...\2040+Proj PM.pdf

8/31/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.989	99.1	F
2	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	WB Right	0.988	22.8	C
3	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	EB Left	0.809	18.3	B
4	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	EB Left	0.794	37.0	D
5	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.894	54.9	D
6	Middlefield Rd/Marsh Rd	Signalized	HCM 6th Edition	WB Thru	0.851	45.7	D
7	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.854	90.8	F
8	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	NB Left	0.970	36.3	D
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Left	1.697	193.5	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Two-way stop	HCM 6th Edition	EB Left	0.065	36.0	E
11	Chrysler Dr/Independence Dr	Two-way stop	HCM 6th Edition	EB Thru	0.011	18.5	C
12	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.224	114.6	F
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	1.505	202.8	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.406	163.1	F
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	EB Thru	1.168	141.7	F
16	Southwest Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.007	11.3	B
17	Southeast Driveway/Independence Drive	Two-way stop	HCM 6th Edition	SB Left	0.012	11.0	B

18	North Driveway/Constitution Drive	Two-way stop	HCM 6th Edition	NB Right	0.069	12.1	B
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V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	99.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Ba Ex		
Base Volume Input [veh/h]	196	40	1729	12	31	5	9	756	232	2653	841	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	0	0	7	0	34	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	40	1730	12	31	5	9	763	232	2687	845	14
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	51	10	451	3	8	1	2	199	60	700	220	4
Total Analysis Volume [veh/h]	204	42	1802	13	32	5	9	795	242	2799	880	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	31	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.20	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.13	0.43	0.01	0.01	0.22	0.22	0.16	0.54	0.53
s, saturation flow rate [veh/h]	1824	4190	1854	1633	1892	1724	1554	5150	1680
c, Capacity [veh/h]	115	2310	337	297	371	338	305	2571	838
d1, Uniform Delay [s]	74.97	28.26	54.31	54.34	64.31	64.31	60.99	40.07	40.07
k, delay calibration	0.50	0.50	0.04	0.04	0.50	0.50	0.31	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	543.78	2.69	0.04	0.04	88.18	90.23	12.38	47.22	50.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.15	0.78	0.08	0.08	1.13	1.13	0.79	1.09	1.07
d, Delay for Lane Group [s/veh]	618.75	30.95	54.35	54.38	152.49	154.53	73.38	87.29	90.82
Lane Group LOS	F	C	D	D	F	F	E	F	F
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	22.06	18.56	0.89	0.81	24.25	22.29	10.43	44.36	44.22
50th-Percentile Queue Length [ft/ln]	551.38	463.88	22.32	20.31	606.34	557.15	260.64	1109.02	1105.50
95th-Percentile Queue Length [veh/ln]	35.12	25.62	1.61	1.46	34.58	32.09	15.72	59.16	58.13
95th-Percentile Queue Length [ft/ln]	878.00	640.49	40.18	36.55	864.38	802.28	393.02	1479.06	1453.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	618.75	618.75	30.95	54.35	54.37	54.38	152.49	153.47	73.38	87.29	90.82	90.82
Movement LOS	F	F	C	D	D	D	F	F	E	F	F	F
d_A, Approach Delay [s/veh]	101.55			54.36			134.93			88.14		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	99.07											
Intersection LOS	F											
Intersection V/C	0.989											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.680			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.73			54.89			51.89			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.939			1.601			2.423			7.655		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Marsh Road and US 101 NB Ramps

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

Intersection Setup

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	Marsh Road		Marsh Road		US 101 NB Offramp	
Base Volume Input [veh/h]	1879	0	0	1575	570	873
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	33	0	0	20	0	18
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1912	0	0	1595	570	891
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	483	0	0	403	144	225
Total Analysis Volume [veh/h]	1931	0	0	1611	576	900
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.55	0.46	0.17	0.35
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2071	2095	1182	906
d1, Uniform Delay [s]	14.79	12.16	20.33	25.85
k, delay calibration	0.50	0.50	0.04	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.19	2.78	0.12	9.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.77	0.49	0.99
d, Delay for Lane Group [s/veh]	23.98	14.94	20.44	35.76
Lane Group LOS	C	B	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.91	9.91	4.03	9.22
50th-Percentile Queue Length [ft/ln]	397.83	247.74	100.73	230.42
95th-Percentile Queue Length [veh/ln]	22.46	15.07	7.25	14.20
95th-Percentile Queue Length [ft/ln]	561.38	376.81	181.31	354.89

Movement, Approach, & Intersection Results

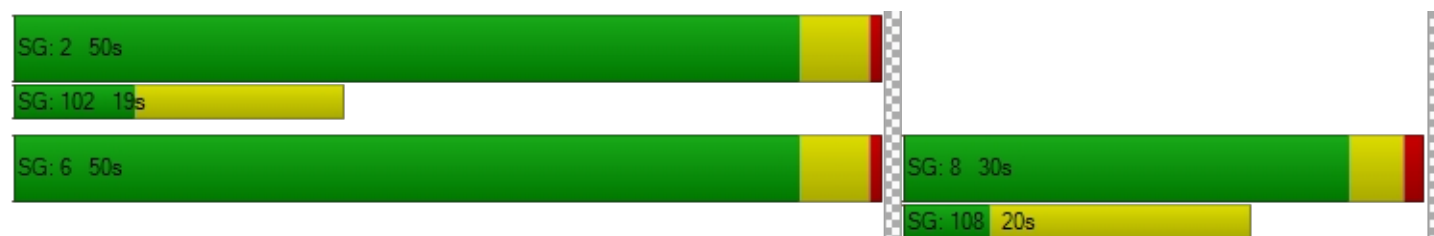
d_M, Delay for Movement [s/veh]	23.98	0.00	0.00	14.94	20.44	35.76
Movement LOS	C			B	C	D
d_A, Approach Delay [s/veh]	23.98		14.94		29.78	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.78					
Intersection LOS	C					
Intersection V/C	0.988					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.209	2.484
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.46	7.49	18.34
I_b,int, Bicycle LOS Score for Intersection	3.153	2.889	1.560
Bicycle LOS	C	C	A

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Marsh Rd (SR 84)/US 101 SB Offramp

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.809

Intersection Setup

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↑↑		↑↑		↶↶↶↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	960	1193	217	1287	427
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	8	0	24	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	969	1201	217	1311	427
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	247	306	54	334	109
Total Analysis Volume [veh/h]	0	989	1226	217	1338	436
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		4		5	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.25	0.35	0.39	0.15
s, saturation flow rate [veh/h]	4000	3540	3414	2847
c, Capacity [veh/h]	2122	1785	1410	1176
d1, Uniform Delay [s]	11.68	15.00	22.59	16.22
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	2.18	1.76	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.69	0.95	0.37
d, Delay for Lane Group [s/veh]	12.42	17.18	24.35	16.30
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.01	7.93	11.51	2.62
50th-Percentile Queue Length [ft/ln]	125.32	198.29	287.66	65.59
95th-Percentile Queue Length [veh/ln]	8.68	12.55	17.07	4.72
95th-Percentile Queue Length [ft/ln]	217.11	313.76	426.73	118.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	12.42	17.18	0.00	24.35	16.30
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	12.42		17.18		22.37	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.31					
Intersection LOS	B					
Intersection V/C	0.809					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	27.17
I_p,int, Pedestrian LOS Score for Intersection	2.881	0.000	2.636
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.79	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.376	2.571	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Marsh Rd/Rolison Rd-Scott Dr

Control Type:	Signalized	Delay (sec / veh):	37.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

Intersection Setup

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Rolison Road			Scott Drive		
Base Volume Input [veh/h]	50	1318	7	75	1041	268	307	6	4	15	6	413
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	1.30	7.70	0.00	3.70	0.00	1.70
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	8	0	1	7	0	0	0	0	0	0	1
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	59
Total Hourly Volume [veh/h]	50	1326	7	76	1048	268	307	6	4	15	6	355
Peak Hour Factor	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960	0.960
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	13	345	2	20	273	70	80	2	1	4	2	92
Total Analysis Volume [veh/h]	52	1381	7	79	1092	279	320	6	4	16	6	370
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			0			1			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	0	6	0
Maximum Green [s]	15	40	40	15	40	40	20	20	20	0	20	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.2	3.2	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	12	51	51	31	70	70	37	37	37	0	41	0
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	8	8	8	0	8	0
Pedestrian Clearance [s]	0	21	21	0	21	21	24	24	24	0	28	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	8	88	88	96	86	86	32	32	25	25
g / C, Green / Cycle	0.05	0.55	0.55	0.60	0.54	0.54	0.20	0.20	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.09	0.38	0.39	0.18	0.01	0.01	0.13
s, saturation flow rate [veh/h]	1761	3549	1859	904	1877	1731	1791	1665	1833	2820
c, Capacity [veh/h]	88	1965	1029	517	1015	936	360	335	290	447
d1, Uniform Delay [s]	74.34	21.42	21.42	16.29	26.96	27.41	62.12	51.33	57.29	65.15
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.39	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.67	0.79	1.50	0.05	3.90	4.60	21.83	0.03	0.08	3.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.46	0.46	0.15	0.69	0.71	0.89	0.03	0.08	0.83
d, Delay for Lane Group [s/veh]	79.01	22.21	22.93	16.34	30.86	32.00	83.95	51.35	57.37	68.15
Lane Group LOS	E	C	C	B	C	C	F	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.21	10.47	11.17	0.63	20.61	19.97	14.97	0.33	0.78	7.58
50th-Percentile Queue Length [ft/ln]	55.22	261.77	279.36	15.64	515.23	499.34	374.23	8.32	19.49	189.46
95th-Percentile Queue Length [veh/ln]	3.98	15.78	16.66	1.13	28.05	27.30	21.31	0.60	1.40	12.09
95th-Percentile Queue Length [ft/ln]	99.39	394.44	416.41	28.15	701.35	682.57	532.86	14.97	35.08	302.32

Movement, Approach, & Intersection Results

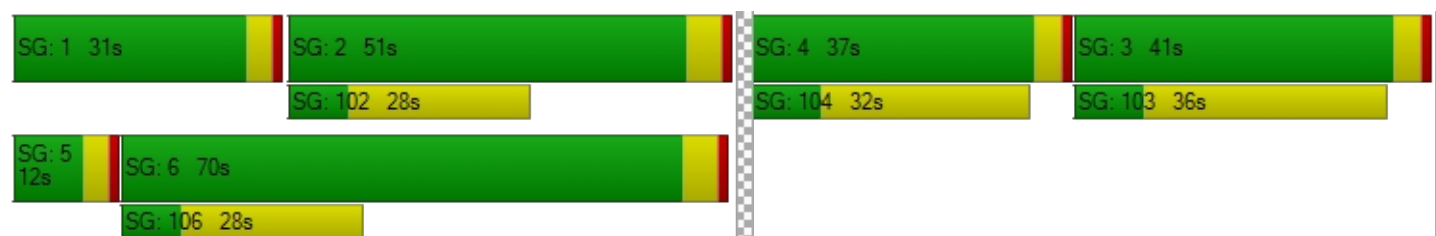
d_M, Delay for Movement [s/veh]	79.01	22.46	22.93	16.34	31.27	32.00	83.95	51.35	51.35	57.37	57.37	68.15
Movement LOS	E	C	C	B	C	C	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	24.50			30.60			82.96			67.55		
Approach LOS	C			C			F			E		
d_I, Intersection Delay [s/veh]	36.96											
Intersection LOS	D											
Intersection V/C	0.794											

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.40			68.40			69.33			69.33		
I_p,int, Pedestrian LOS Score for Intersection	3.035			3.202			2.148			2.563		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			410			460		
d_b, Bicycle Delay [s]	40.57			28.18			50.52			47.39		
I_b,int, Bicycle LOS Score for Intersection	2.352			2.756			2.104			2.304		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 5: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	54.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

Intersection Setup

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	740	61	441	719	56	100	26	2	65	114	310
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	4	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	61	441	723	56	100	26	2	65	114	310
Peak Hour Factor	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890	0.890
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	1	209	17	124	203	16	28	7	1	18	32	87
Total Analysis Volume [veh/h]	2	837	69	496	812	63	112	29	2	73	128	348
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			6			0			6		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			1			5			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	29	29
g / C, Green / Cycle	0.34	0.34	0.20	0.58	0.58	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.28	0.23	0.24	0.25	0.31
s, saturation flow rate [veh/h]	1859	1644	1795	1885	1830	568	1750
c, Capacity [veh/h]	676	558	361	1089	1057	287	689
d1, Uniform Delay [s]	23.58	23.64	32.07	9.34	9.37	22.04	23.57
k, delay calibration	0.50	0.50	0.28	0.50	0.50	0.32	0.41
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.25	9.61	178.49	1.12	1.17	3.95	7.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.76	1.38	0.41	0.41	0.50	0.80
d, Delay for Lane Group [s/veh]	29.83	33.25	210.56	10.47	10.54	25.99	31.33
Lane Group LOS	C	C	F	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.67	8.16	24.51	3.97	3.90	2.60	10.44
50th-Percentile Queue Length [ft/ln]	216.85	204.11	612.72	99.13	97.59	64.99	261.07
95th-Percentile Queue Length [veh/ln]	13.50	12.85	37.77	7.14	7.03	4.68	15.74
95th-Percentile Queue Length [ft/ln]	337.60	321.26	944.29	178.43	175.66	116.98	393.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.83	31.30	33.25	210.56	10.50	10.54	25.99	25.99	25.99	31.33	31.33	31.33
Movement LOS	C	C	C	F	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.44			82.88			25.99			31.33		
Approach LOS	C			F			C			C		
d_I, Intersection Delay [s/veh]	54.90											
Intersection LOS	D											
Intersection V/C	0.894											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.82			29.82			29.82			19.73		
I_p,int, Pedestrian LOS Score for Intersection	2.739			3.060			1.848			2.249		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.74			8.66			17.46			17.43		
I_b,int, Bicycle LOS Score for Intersection	2.309			2.691			1.796			2.465		
Bicycle LOS	B			B			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 6: Middlefield Rd/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	45.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	Marsh Road		Middlefield Road		Middlefield Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↵↵		↵↑		↑↵	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	225.00	150.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

Volumes

Name	Marsh Road		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	542	444	305	384	408	449
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	1.00	2.00	1.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	1	1	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	242	0	0	0	427
Total Hourly Volume [veh/h]	545	203	306	384	408	26
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	53	80	100	106	7
Total Analysis Volume [veh/h]	568	211	319	400	425	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		8		15	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Overlap	Protected	Permissive	Permissive	Permissive
Signal Group	3	1	1	2	2	2
Auxiliary Signal Groups		1,3				4,6
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	6	20	20	20	20	20
Maximum Green [s]	53	23	23	17	17	17
Amber [s]	3.2	3.0	3.0	3.2	3.2	3.2
All red [s]	2.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	0	0	30	30	30
Vehicle Extension [s]	2.5	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	0	8	8	8
Pedestrian Clearance [s]	0	0	0	12	12	12
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	3.2	2.0	2.0	2.2	2.2	2.2
Minimum Recall	No	No	No	No	No	
Maximum Recall	No	No	No	Yes	Yes	
Pedestrian Recall	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	5.20	4.00	4.00	4.20	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.20	0.00	2.00	2.20	2.20	2.20
g_i, Effective Green Time [s]	27	52	20	17	17	17
g / C, Green / Cycle	0.35	0.68	0.26	0.22	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.32	0.13	0.18	0.21	0.23	0.02
s, saturation flow rate [veh/h]	1795	1595	1795	1870	1885	1542
c, Capacity [veh/h]	630	1076	462	409	413	338
d1, Uniform Delay [s]	23.92	4.70	26.04	30.14	30.34	24.11
k, delay calibration	0.08	0.04	0.09	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.84	0.03	1.51	39.17	52.26	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.20	0.69	0.98	1.03	0.08
d, Delay for Lane Group [s/veh]	27.76	4.74	27.55	69.31	82.59	24.57
Lane Group LOS	C	A	C	E	F	C
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.91	1.01	5.28	11.55	13.35	0.43
50th-Percentile Queue Length [ft/ln]	247.63	25.22	132.03	288.71	333.84	10.66
95th-Percentile Queue Length [veh/ln]	15.07	1.82	9.05	17.12	19.67	0.77
95th-Percentile Queue Length [ft/ln]	376.67	45.39	226.26	428.04	491.66	19.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.76	4.74	27.55	69.31	82.59	24.57
Movement LOS	C	A	C	E	F	C
d_A, Approach Delay [s/veh]	21.52		50.78		79.13	
Approach LOS	C		D		E	
d_I, Intersection Delay [s/veh]	45.66					
Intersection LOS	D					
Intersection V/C	0.851					

Other Modes

g_Walk,mi, Effective Walk Time [s]	12.0	0.0	-5.2
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.72	0.00	44.17
I_p,int, Pedestrian LOS Score for Intersection	2.903	0.000	3.157
Crosswalk LOS	C	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	129	516	516
d_b, Bicycle Delay [s]	34.00	21.45	21.53
I_b,int, Bicycle LOS Score for Intersection	1.560	2.746	3.010
Bicycle LOS	A	B	C

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Marsh Rd/Florence St-Bohannon Dr

Control Type:	Signalized	Delay (sec / veh):	90.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.854

Intersection Setup

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	296	670	54	13	1009	351	471	34	235	126	87	40
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	0	0	4	3	3	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	296	675	54	13	1013	354	474	34	220	126	87	40
Peak Hour Factor	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930	0.930
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	80	181	15	3	272	95	127	9	59	34	23	11
Total Analysis Volume [veh/h]	318	726	58	14	1089	381	510	37	237	135	94	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	101	101	4	92	92	30	30	30	17	17
g / C, Green / Cycle	0.08	0.63	0.63	0.02	0.58	0.58	0.18	0.18	0.18	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.41	0.42	0.15	0.15	0.15	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1798	1714	1867	1679	1774	1821	1572	1751	1788
c, Capacity [veh/h]	144	1172	1137	41	1075	967	327	336	290	190	194
d1, Uniform Delay [s]	73.44	13.72	13.73	76.76	24.27	24.96	62.69	62.67	62.35	68.83	68.80
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	566.66	0.78	0.81	1.80	3.92	4.96	3.96	3.82	4.21	3.63	3.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.21	0.34	0.34	0.34	0.71	0.74	0.83	0.82	0.82	0.71	0.71
d, Delay for Lane Group [s/veh]	640.09	14.50	14.55	78.56	28.18	29.92	66.65	66.48	66.56	72.46	72.28
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	28.55	6.94	6.78	0.59	21.35	20.75	11.06	11.31	9.67	5.59	5.67
50th-Percentile Queue Length [ft/ln]	713.72	173.46	169.45	14.72	533.67	518.85	276.40	282.69	241.73	139.87	141.70
95th-Percentile Queue Length [veh/ln]	44.99	11.26	11.05	1.06	28.92	28.23	16.51	16.82	14.77	9.47	9.57
95th-Percentile Queue Length [ft/ln]	1124.68	281.45	276.20	26.49	723.10	705.64	412.73	420.56	369.23	236.84	239.31

Movement, Approach, & Intersection Results

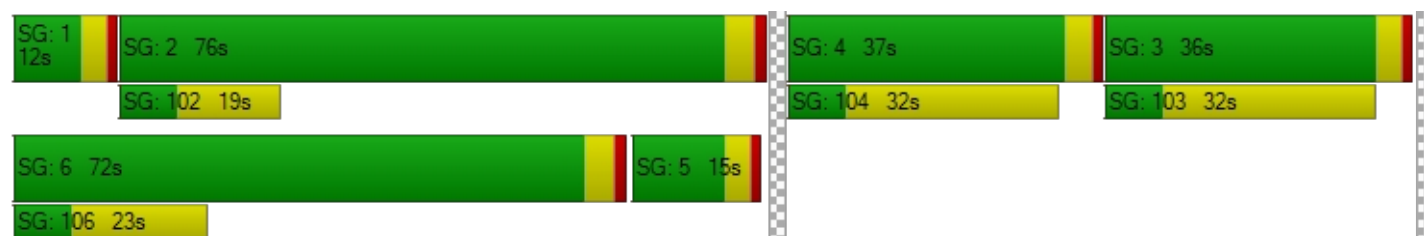
d_M, Delay for Movement [s/veh]	640.09	14.52	14.55	78.56	28.71	29.92	66.57	66.48	66.56	72.46	72.28	72.28
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	195.04			29.49			66.57			72.37		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	90.77											
Intersection LOS	F											
Intersection V/C	0.854											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.969			3.004			2.503			2.071		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.52			26.79			51.24			50.55		
I_b,int, Bicycle LOS Score for Intersection	2.469			2.784			2.878			2.008		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Bayfront Expy/Chrysler Drive

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↷		↑↑↑↶		↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	991	73	2657	85	44	2437
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	38	16	0	8	25	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1029	89	2657	93	69	2437
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	23	678	24	18	622
Total Analysis Volume [veh/h]	1050	91	2711	95	70	2487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	5	59
g / C, Green / Cycle	0.26	0.26	0.53	0.53	0.05	0.62
(v / s)_i Volume / Saturation Flow Rate	0.30	0.06	0.54	0.06	0.04	0.50
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	914	426	2670	846	93	3096
d1, Uniform Delay [s]	34.88	27.21	22.38	11.24	44.36	13.52
k, delay calibration	0.06	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	68.75	0.09	9.44	0.02	4.57	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.15	0.21	1.02	0.11	0.75	0.80
d, Delay for Lane Group [s/veh]	103.63	27.30	31.82	11.26	48.93	13.71
Lane Group LOS	F	C	F	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.09	1.62	19.01	0.90	1.68	10.63
50th-Percentile Queue Length [ft/ln]	477.33	40.54	475.30	22.47	41.92	265.72
95th-Percentile Queue Length [veh/ln]	28.40	2.92	26.47	1.62	3.02	15.98
95th-Percentile Queue Length [ft/ln]	710.00	72.96	661.85	40.44	75.45	399.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	103.63	27.30	31.82	11.26	48.93	13.71
Movement LOS	F	C	F	B	D	B
d_A, Approach Delay [s/veh]	97.54		31.12		14.68	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	36.31					
Intersection LOS	D					
Intersection V/C	0.970					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.99	36.99	36.99
I_p,int, Pedestrian LOS Score for Intersection	2.398	3.887	3.716
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	1056	1056
d_b, Bicycle Delay [s]	25.65	10.55	10.55
I_b,int, Bicycle LOS Score for Intersection	1.560	3.103	2.966
Bicycle LOS	A	C	C

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	193.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.697

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	472	78	349	50	8	308	159	3	58	15	238
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.0	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	1	0	11	22	36	2	6	2	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	490	79	349	61	30	344	161	9	60	18	238
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	123	20	87	15	8	86	40	2	15	5	60
Total Analysis Volume [veh/h]	0	490	79	349	61	30	344	161	9	60	18	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	22	22	30
g / C, Green / Cycle	0.32	0.32	0.32	0.24	0.24	0.32
(v / s)_i Volume / Saturation Flow Rate	0.18	0.19	1.13	0.21	0.10	0.35
s, saturation flow rate [veh/h]	1598	1470	388	1609	1670	906
c, Capacity [veh/h]	547	468	192	381	396	287
d1, Uniform Delay [s]	26.43	26.92	42.77	34.89	30.54	32.16
k, delay calibration	0.14	0.15	0.50	0.21	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.07	1.61	597.22	13.89	0.74	82.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.59	2.29	0.90	0.43	1.10
d, Delay for Lane Group [s/veh]	27.50	28.53	639.99	48.78	31.28	114.61
Lane Group LOS	C	C	F	D	C	F
Critical Lane Group	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.49	5.28	36.34	8.95	3.32	12.89
50th-Percentile Queue Length [ft/ln]	137.13	131.90	908.41	223.82	82.95	322.37
95th-Percentile Queue Length [veh/ln]	9.33	9.04	61.77	13.86	5.97	19.86
95th-Percentile Queue Length [ft/ln]	233.16	226.08	1544.31	346.50	149.30	496.55

Movement, Approach, & Intersection Results

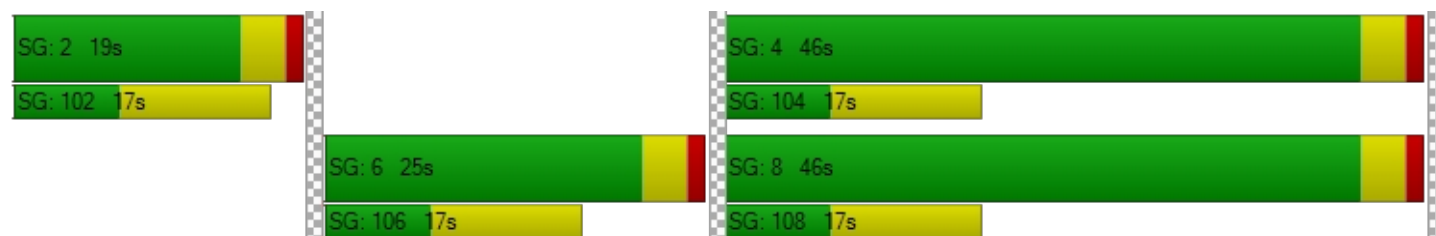
d_M, Delay for Movement [s/veh]	27.50	27.91	28.53	639.99	639.99	639.99	48.78	31.28	31.28	114.61	114.61	114.61
Movement LOS	C	C	C	F	F	F	D	C	C	F	F	F
d_A, Approach Delay [s/veh]	28.00			639.99			42.99			114.61		
Approach LOS	C			F			D			F		
d_I, Intersection Delay [s/veh]	193.50											
Intersection LOS	F											
Intersection V/C	1.697											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	36.81			36.81			36.81			36.81		
I_p,int, Pedestrian LOS Score for Intersection	2.169			2.433			2.125			2.654		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	891			891			445			318		
d_b, Bicycle Delay [s]	14.51			14.51			28.50			33.36		
I_b,int, Bicycle LOS Score for Intersection	2.029			2.286			2.408			2.081		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway

Control Type:	Two-way stop	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.065

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	239	138	80	31	0	0	0	0	19	0	319
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	5	13	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	250	138	80	36	13	8	0	0	19	0	319
Peak Hour Factor	1.000	0.850	0.850	0.850	0.850	1.000	1.000	1.000	1.000	0.850	1.000	0.850
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	74	41	24	11	3	2	0	0	6	0	94
Total Analysis Volume [veh/h]	0	294	162	94	42	13	8	0	0	22	0	375
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.00	0.06	0.00	0.00	0.06	0.00	0.56
d_M, Delay for Movement [s/veh]	7.32	0.00	0.00	8.95	0.00	0.00	36.02	17.85	10.52	23.11	23.43	18.96
Movement LOS	A	A	A	A	A	A	E	C	B	C	C	C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.31	0.31	0.31	0.20	0.20	0.20	4.25	4.25	4.25
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	7.71	7.71	7.71	5.10	5.10	5.10	106.22	106.22	106.22
d_A, Approach Delay [s/veh]	0.00			5.64			36.02			19.19		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	8.66											
Intersection LOS	E											

Intersection Level Of Service Report

Intersection 11: Chrysler Dr/Independence Dr

Control Type: Two-way stop
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 18.5
 Level Of Service: C
 Volume to Capacity (v/c): 0.011

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	37	133	0	0	18	32	230	5	60	2	0	14
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.0	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	5	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	133	0	0	18	37	241	5	60	2	0	14
Peak Hour Factor	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	11	41	0	0	5	11	73	2	18	1	0	4
Total Analysis Volume [veh/h]	45	162	0	0	22	45	294	6	73	2	0	17
Pedestrian Volume [ped/h]	31			0			1			34		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.00	0.00	0.48	0.01	0.08	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	7.40	0.00	0.00	8.89	0.00	0.00	17.89	18.50	15.74	12.74	11.82	9.50
Movement LOS	A	A	A	A	A	A	C	C	C	B	B	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.09	0.00	0.00	0.00	3.59	3.59	3.59	0.08	0.08	0.08
95th-Percentile Queue Length [ft/ln]	2.25	2.25	2.25	0.00	0.00	0.00	89.80	89.80	89.80	1.91	1.91	1.91
d_A, Approach Delay [s/veh]	1.61			0.00			17.48			9.84		
Approach LOS	A			A			C			A		
d_I, Intersection Delay [s/veh]	10.57											
Intersection LOS	C											

Intersection Level Of Service Report

Intersection 12: Bayfront Expy/Chilco St

Control Type:	Signalized	Delay (sec / veh):	114.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.224

Intersection Setup

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐⇐		↑↑↑⇐		⇐↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	782	555	2519	280	219	1941
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	16	0	0	25
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	782	555	2535	280	219	1966
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	210	149	681	75	59	528
Total Analysis Volume [veh/h]	841	597	2726	301	235	2114
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

Phasing & Timing

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	97	97	97	97	97	97
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	67	67
g / C, Green / Cycle	0.21	0.21	0.52	0.52	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.28	0.43	0.60	0.21	0.68	0.47
s, saturation flow rate [veh/h]	3025	1389	4544	1421	347	4481
c, Capacity [veh/h]	625	287	2349	734	312	3096
d1, Uniform Delay [s]	38.37	38.17	23.37	14.28	27.83	8.75
k, delay calibration	0.15	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	158.39	497.54	72.77	0.14	15.48	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.34	2.08	1.16	0.41	0.75	0.68
d, Delay for Lane Group [s/veh]	196.77	535.70	96.14	14.42	43.31	8.85
Lane Group LOS	F	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	21.02	46.31	30.69	3.52	2.69	6.35
50th-Percentile Queue Length [ft/ln]	525.46	1157.68	767.13	87.98	67.21	158.80
95th-Percentile Queue Length [veh/ln]	32.74	73.92	44.35	6.33	4.84	10.49
95th-Percentile Queue Length [ft/ln]	818.56	1848.03	1108.87	158.36	120.98	262.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	196.77	535.70	96.14	14.42	43.31	8.85
Movement LOS	F	F	F	B	D	A
d_A, Approach Delay [s/veh]	337.48		88.01		12.29	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	114.56					
Intersection LOS	F					
Intersection V/C	1.224					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.96	37.96	37.96
I_p,int, Pedestrian LOS Score for Intersection	2.957	3.944	3.782
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	414	1034	1034
d_b, Bicycle Delay [s]	30.53	11.27	11.27
I_b,int, Bicycle LOS Score for Intersection	1.560	3.224	2.852
Bicycle LOS	A	C	C

Sequence

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	202.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.505

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	90	484	27	131	346	51	325	21	602	270	18	678
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	0	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	484	27	131	346	51	325	21	605	270	18	678
Peak Hour Factor	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880	0.880
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	27	138	8	37	98	14	92	6	172	77	5	193
Total Analysis Volume [veh/h]	108	550	31	149	393	58	369	24	688	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	3	8	0	7	4	0	0	2	2	0	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	31	0	18	39	0	0	38	38	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	9	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	6	32	9	35	34	83	39	39
g / C, Green / Cycle	0.05	0.25	0.07	0.27	0.26	0.64	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.08	0.35	0.05	0.29	0.40	0.49	0.43	0.47
s, saturation flow rate [veh/h]	1353	1674	2868	1581	988	1405	963	1442
c, Capacity [veh/h]	63	411	200	424	258	897	289	433
d1, Uniform Delay [s]	61.97	49.04	59.35	47.55	48.01	16.47	45.48	45.48
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	333.48	200.01	5.46	61.23	253.34	6.22	215.48	269.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.71	1.41	0.75	1.06	1.52	0.77	1.44	1.57
d, Delay for Lane Group [s/veh]	395.45	249.06	64.81	108.79	301.35	22.69	260.97	314.57
Lane Group LOS	F	F	E	F	F	C	F	F
Critical Lane Group	No	No	No	Yes	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.94	36.10	2.57	20.87	26.50	15.10	26.56	46.22
50th-Percentile Queue Length [ft/ln]	198.59	902.62	64.13	521.64	662.54	377.56	663.91	1155.57
95th-Percentile Queue Length [veh/ln]	14.04	54.60	4.62	29.43	42.39	21.48	42.04	71.70
95th-Percentile Queue Length [ft/ln]	351.04	1364.91	115.44	735.77	1059.75	536.89	1050.99	1792.55

Movement, Approach, & Intersection Results

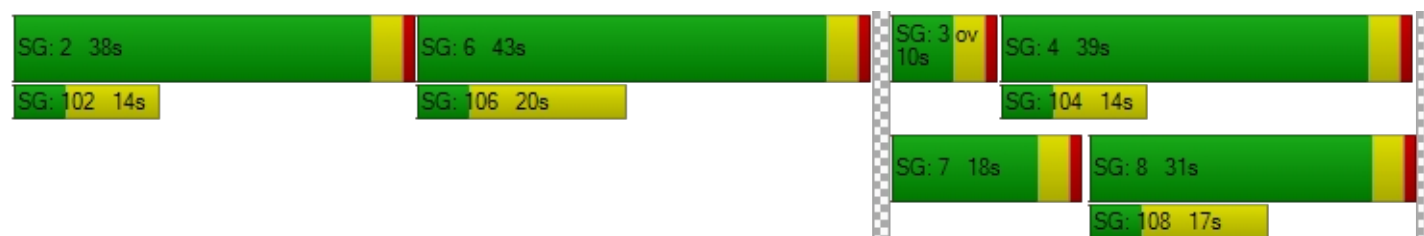
d_M, Delay for Movement [s/veh]	395.45	249.06	249.06	64.81	108.79	108.79	301.35	301.35	22.69	260.97	260.97	303.98
Movement LOS	F	F	F	E	F	F	F	F	C	F	F	F
d_A, Approach Delay [s/veh]	272.00			97.86			124.00			294.26		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	202.76											
Intersection LOS	F											
Intersection V/C	1.505											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.634	2.765	2.371	2.467
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	415	538	523	600
d_b, Bicycle Delay [s]	40.81	34.71	35.45	31.85
I_b,int, Bicycle LOS Score for Intersection	2.696	2.550	3.343	3.370
Bicycle LOS	B	B	C	C

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	163.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.406

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Wi Ro			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	195	95	1142	159	332	146	76	2269	402	559	846	34
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	0	0	0	0	11	5	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	204	95	1142	159	332	130	76	2280	301	559	862	34
Peak Hour Factor	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970	0.970
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	53	24	294	41	86	34	20	588	78	144	222	9
Total Analysis Volume [veh/h]	210	98	1177	164	342	134	78	2351	310	576	889	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	15	15	43	9	10	10	5	40	40	23	58	58
g / C, Green / Cycle	0.14	0.14	0.40	0.08	0.09	0.09	0.05	0.37	0.37	0.22	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07	0.64	0.09	0.21	0.09	0.03	0.46	0.21	0.17	0.18	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1451	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	245	207	738	146	146	132	119	1887	544	727	2688	875
d1, Uniform Delay [s]	45.30	42.67	32.19	49.37	48.96	48.53	50.42	33.83	26.96	39.83	13.77	11.55
k, delay calibration	0.15	0.11	0.50	0.37	0.46	0.36	0.11	0.11	0.12	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.08	1.68	274.22	101.15	620.94	70.03	5.99	111.55	1.07	2.00	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.47	1.60	1.12	2.34	1.01	0.66	1.25	0.57	0.79	0.33	0.04
d, Delay for Lane Group [s/veh]	56.39	44.35	306.41	150.52	669.90	118.56	56.41	145.38	28.04	41.83	13.84	11.57
Lane Group LOS	E	D	F	F	F	F	E	F	C	D	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	6.10	1.22	24.69	8.08	14.61	6.14	1.13	35.40	6.41	7.34	3.91	0.39
50th-Percentile Queue Length [ft/ln]	152.40	30.55	617.20	201.94	365.20	153.38	28.24	885.05	160.22	183.45	97.78	9.76
95th-Percentile Queue Length [veh/ln]	10.14	2.20	41.40	13.26	25.05	10.25	2.03	51.86	10.56	11.78	7.04	0.70
95th-Percentile Queue Length [ft/ln]	253.62	54.99	1035.07	331.61	626.35	256.18	50.83	1296.49	264.02	294.51	176.00	17.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.39	44.35	306.41	150.52	669.90	118.56	56.41	145.38	28.04	41.83	13.84	11.57
Movement LOS	E	D	F	F	F	F	E	F	C	D	B	B
d_A, Approach Delay [s/veh]	253.76			421.37			129.57			24.53		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	163.13											
Intersection LOS	F											
Intersection V/C	1.406											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.17	0.00	45.17	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.150	0.000	3.341	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	792	686	595	1078
d_b, Bicycle Delay [s]	19.64	23.26	26.55	11.43
I_b,int, Bicycle LOS Score for Intersection	2.785	2.101	3.124	2.385
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	141.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.168

Intersection Setup

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↶↶↶↶↶		↑↑↑↶		↶↶↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	2	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	830.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		55.00		55.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

Volumes

Name	University Avenue (SR109)		Bayfront Expy (SR84)		Bayfront Expy (SR84)	
Base Volume Input [veh/h]	65	1893	3766	18	359	957
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	9.00	1.50	2.40	16.10	4.90	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	9	2	0	13
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	1893	3775	20	359	970
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	483	963	5	92	247
Total Analysis Volume [veh/h]	69	1932	3852	20	366	990
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_di, Inbound Pedestrian Volume crossing major street [ped/h]	0		0		0	
v_co, Outbound Pedestrian Volume crossing minor street [ped/h]	8		7		0	
v_ci, Inbound Pedestrian Volume crossing minor street [ped/h]	7		8		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		1	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Overlap	Permissive	Permissive	Protected	Permissive
Signal Group	4	4	6	2	5	2
Auxiliary Signal Groups		4,5				
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	4	10	10	4	10
Maximum Green [s]	15	15	90	140	50	140
Amber [s]	3.0	3.0	5.0	5.4	3.0	5.4
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5
Split [s]	30	30	30	0	0	0
Vehicle Extension [s]	2.0	2.0	3.5	3.5	2.0	3.5
Walk [s]	5	5	5	0	0	0
Pedestrian Clearance [s]	29	29	35	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	4.0	3.9	1.5	3.9
Minimum Recall	No	No	Yes		No	Yes
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	156	156	156	156	156	156
L, Total Lost Time per Cycle [s]	4.00	3.50	6.00	6.00	3.50	5.90
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	0.00	4.00	4.00	1.50	3.90
g_i, Effective Green Time [s]	15	57	90	90	38	131
g / C, Green / Cycle	0.10	0.36	0.58	0.58	0.24	0.84
(v / s)_i Volume / Saturation Flow Rate	0.02	0.46	0.76	0.01	0.11	0.20
s, saturation flow rate [veh/h]	3264	4237	5077	1399	3378	5020
c, Capacity [veh/h]	314	1538	2926	806	815	4220
d1, Uniform Delay [s]	65.19	49.75	33.09	14.22	50.42	2.47
k, delay calibration	0.04	0.04	0.13	0.13	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	115.90	143.07	0.01	0.14	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	1.26	1.32	0.02	0.45	0.23
d, Delay for Lane Group [s/veh]	65.32	165.65	176.16	14.24	50.56	2.51
Lane Group LOS	E	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.28	36.23	71.77	0.29	5.95	1.20
50th-Percentile Queue Length [ft/ln]	31.93	905.79	1794.15	7.36	148.67	30.09
95th-Percentile Queue Length [veh/ln]	2.30	53.13	104.62	0.53	9.95	2.17
95th-Percentile Queue Length [ft/ln]	57.48	1328.30	2615.50	13.24	248.65	54.17

Movement, Approach, & Intersection Results

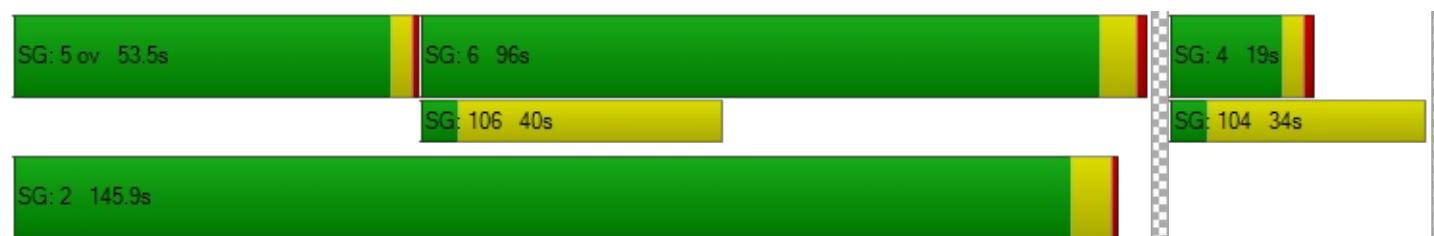
d_M, Delay for Movement [s/veh]	65.32	165.65	176.16	14.24	50.56	2.51
Movement LOS	E	F	F	B	D	A
d_A, Approach Delay [s/veh]	162.19		175.32		15.48	
Approach LOS	F		F		B	
d_I, Intersection Delay [s/veh]	141.70					
Intersection LOS	F					
Intersection V/C	1.168					

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.31	69.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.009	3.880	0.000
Crosswalk LOS	C	D	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	192	538	564
d_b, Bicycle Delay [s]	63.77	41.70	40.27
I_b,int, Bicycle LOS Score for Intersection	1.670	3.689	2.305
Bicycle LOS	A	D	B

Sequence

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Southwest Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name				Southwest Driveway			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name				Southwest Driveway			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	298	0	0	74	0
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	4	0	0	3	7	0	0	0	2
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	4	0	0	3	305	0	0	74	2
Peak Hour Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total 15-Minute Volume [veh/h]	0	0	0	1	0	0	1	76	0	0	19	1
Total Analysis Volume [veh/h]	0	0	0	4	0	0	3	305	0	0	74	2
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.30	11.59	9.90	11.34	11.63	8.69	7.37	0.00	0.00	7.87	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.53	0.53	0.53	0.15	0.15	0.15	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.93			11.34			0.07			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	0.17											
Intersection LOS	B											

Intersection Level Of Service Report

Intersection 17: Southeast Driveway/Independence Drive

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Southeast Driveway		Independence Drive		Independence Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		25.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	Southeast Driveway		Independence Drive		Independence Drive	
Base Volume Input [veh/h]	0	0	0	301	72	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	7	4	2	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	0	7	305	74	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	2	76	19	1
Total Analysis Volume [veh/h]	7	0	7	305	74	3
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.00	8.72	7.38	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.03	0.03	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.87	0.87	0.35	0.35	0.00	0.00
d_A, Approach Delay [s/veh]	11.00		0.17		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.32					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 18: North Driveway/Constitution Drive

Control Type:	Two-way stop	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.069

Intersection Setup

Name	North Driveway		Constitution Drive		Constitution Drive	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	North Driveway		Constitution Drive		Constitution Drive	
Base Volume Input [veh/h]	0	0	508	0	0	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	38	6	35	25	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	38	514	35	25	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	10	129	9	6	12
Total Analysis Volume [veh/h]	0	38	514	35	25	48
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.07	0.01	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	13.77	12.06	0.00	0.00	8.62	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.22	0.22	0.00	0.00	0.08	0.08
95th-Percentile Queue Length [ft/ln]	5.57	5.57	0.00	0.00	1.88	1.88
d_A, Approach Delay [s/veh]	12.06		0.00		2.95	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.02					
Intersection LOS	B					

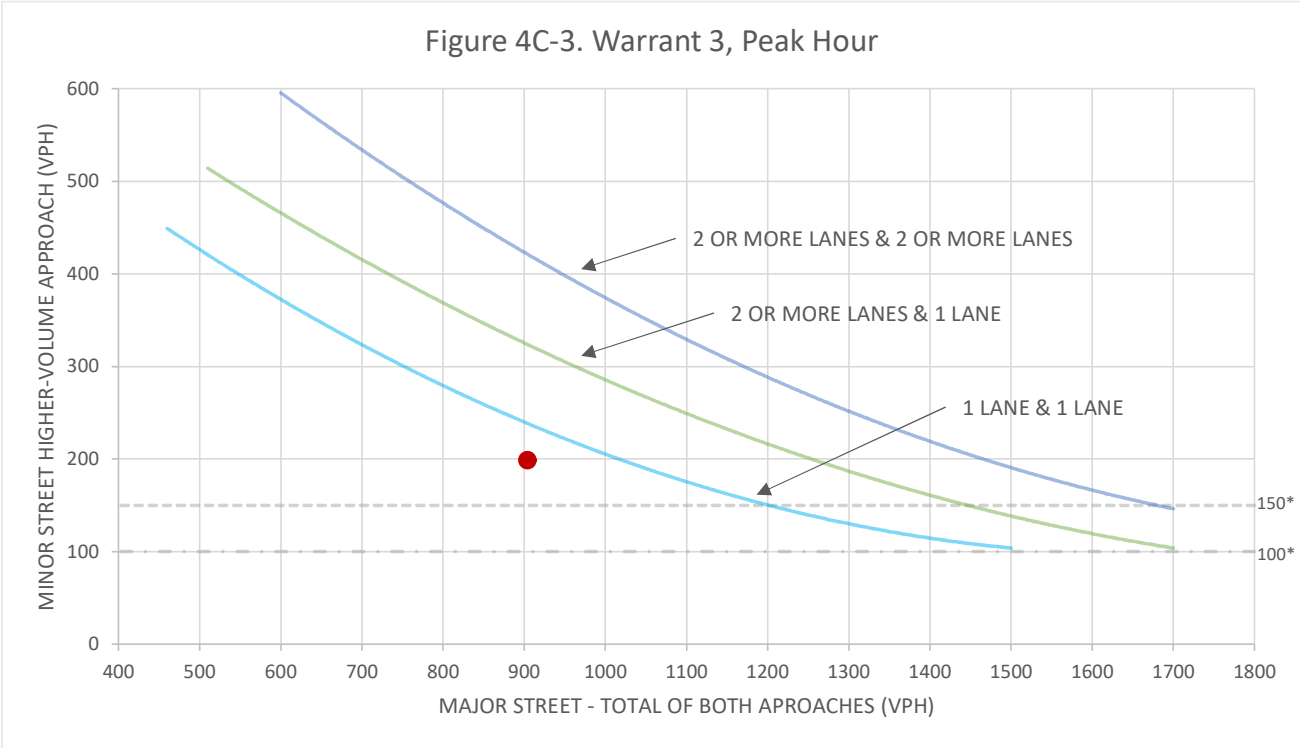
Appendix C

Signal Warrant Worksheets

Project	123 Independence Drive Project
Scenario	Near Term (2025)
Peak Hour	AM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

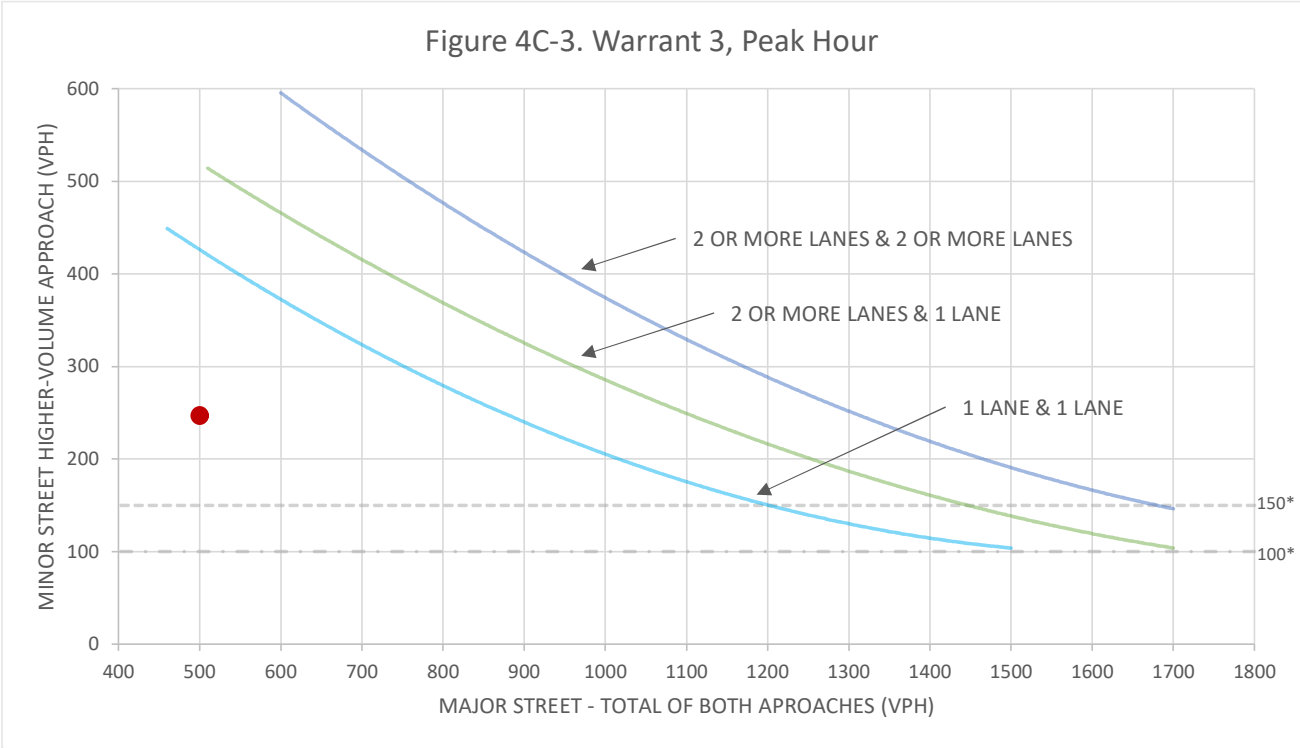
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	904	199	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025)
Peak Hour	AM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

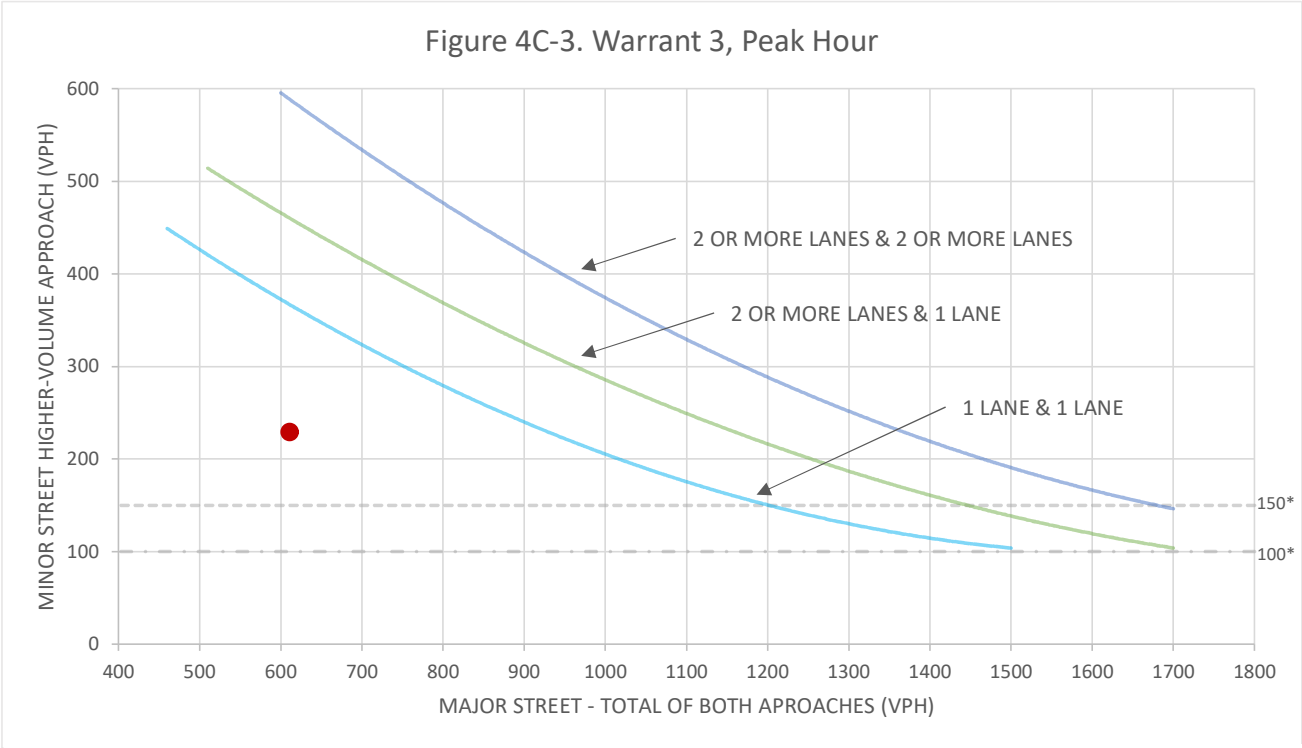
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	<u>No</u>
Traffic Volume (VPH)*	500	247	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025)
Peak Hour	PM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

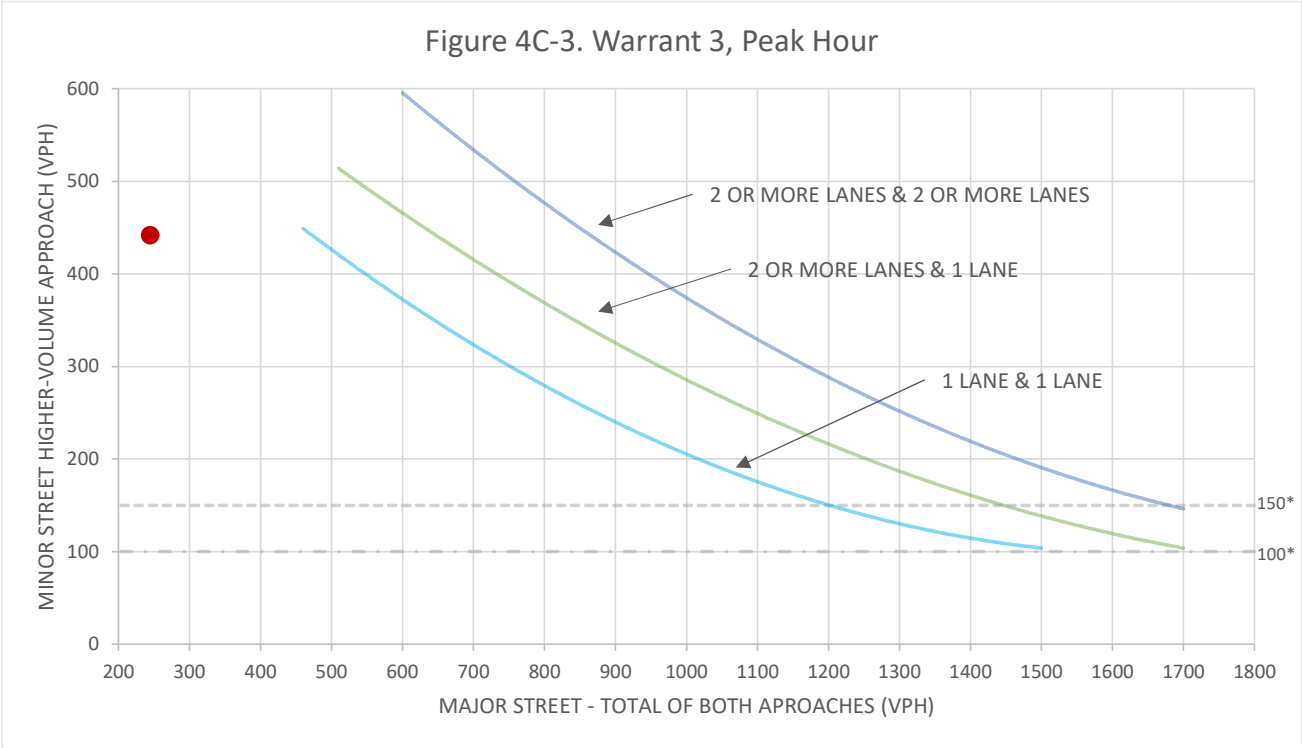
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	611	229	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025)
Peak Hour	PM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

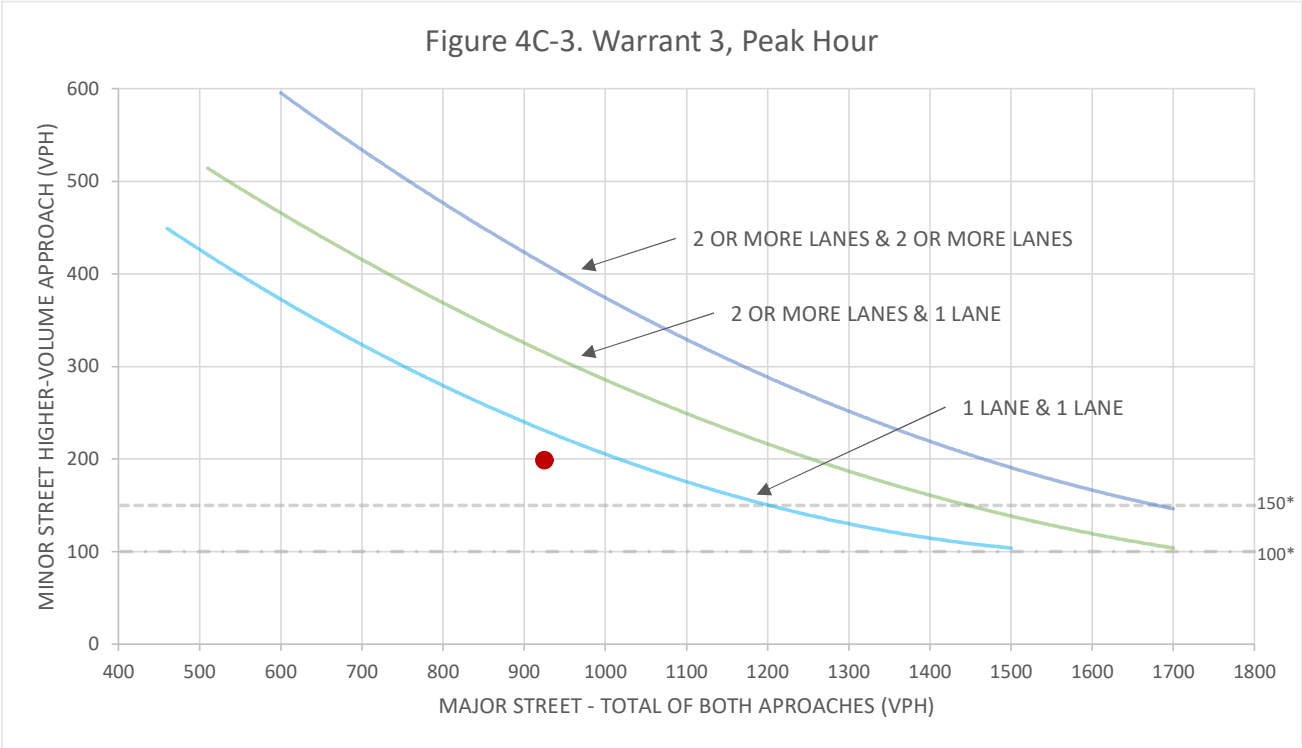
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	No
Traffic Volume (VPH)*	245	441	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025) plus Project
Peak Hour	AM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

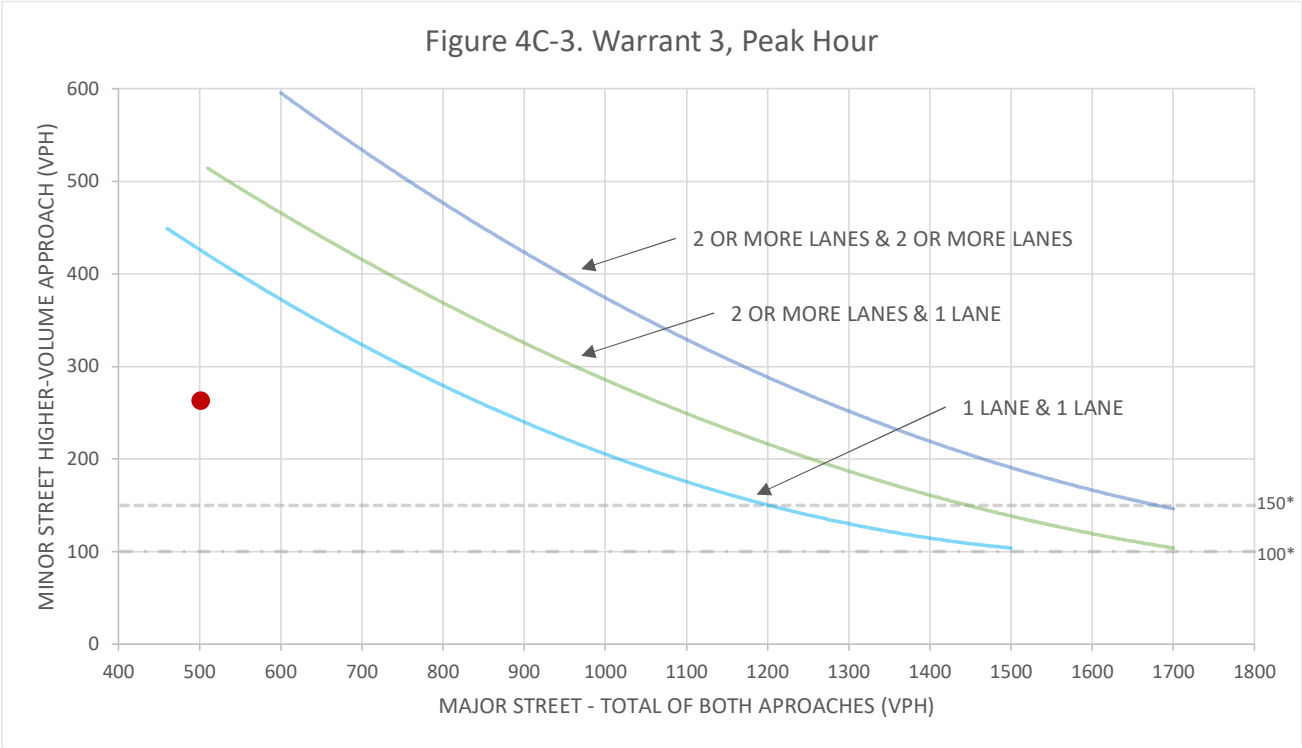
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	925	199	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025) plus Project
Peak Hour	AM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
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☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

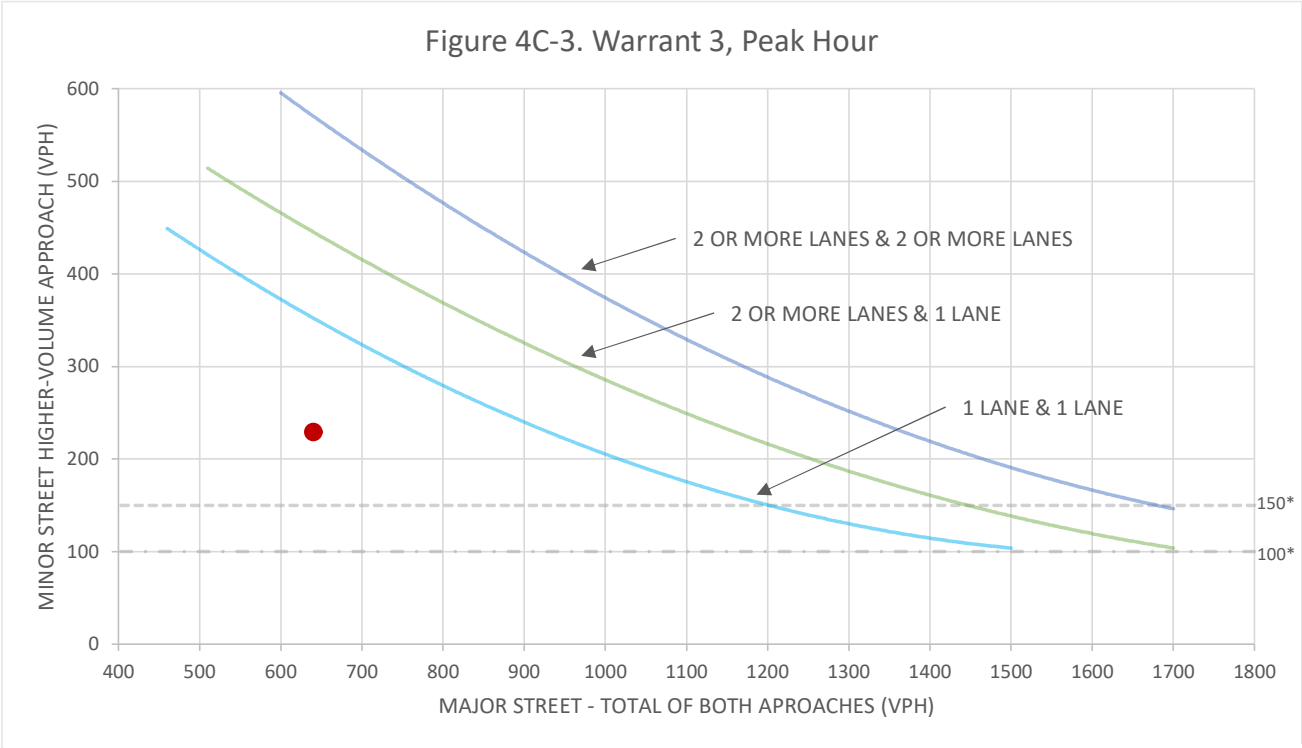
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	<u>No</u>
Traffic Volume (VPH)*	501	263	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025) plus Project
Peak Hour	PM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

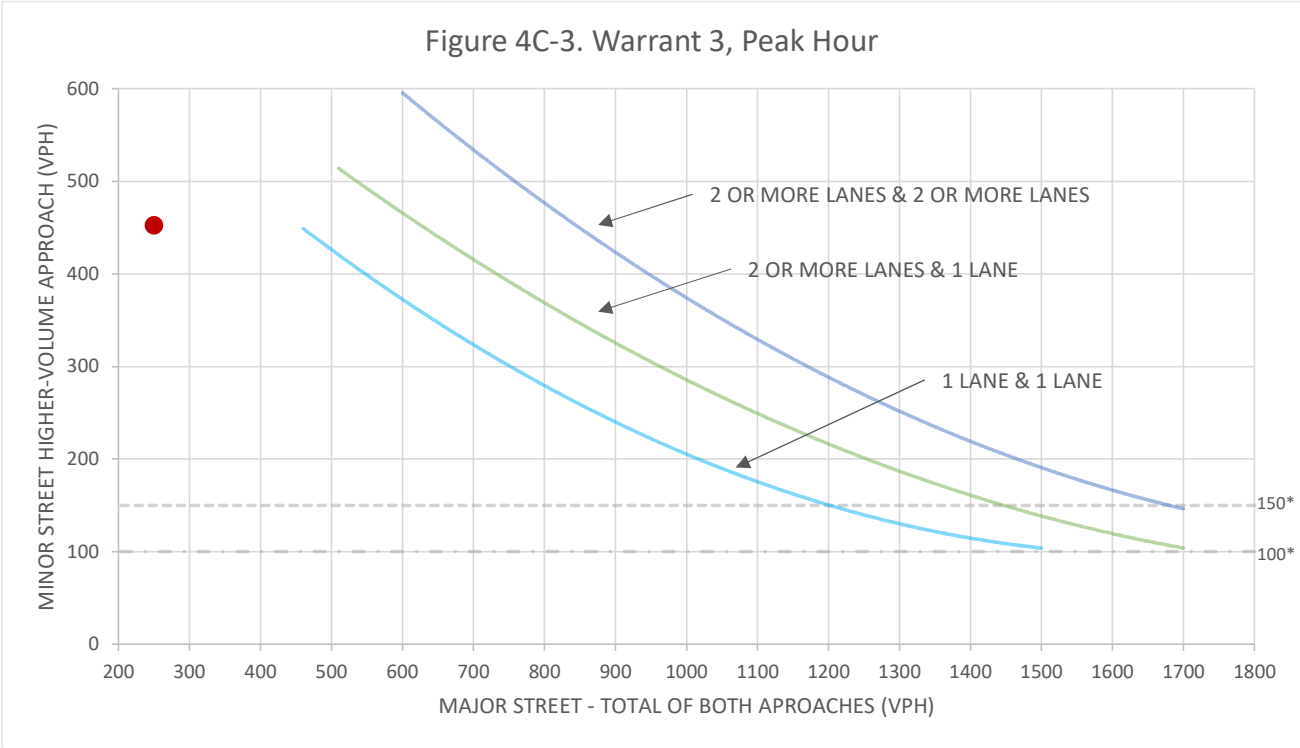
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	640	229	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Near Term (2025) plus Project
Peak Hour	PM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

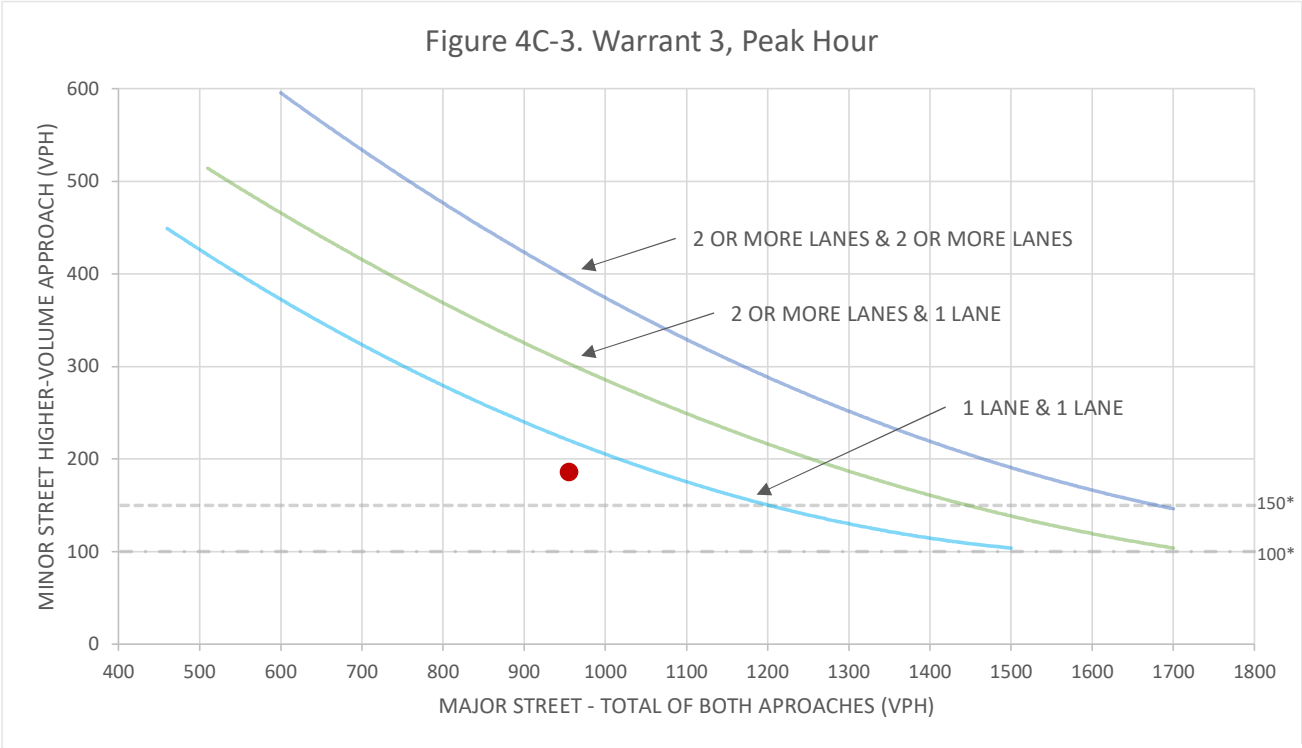
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	<u>No</u>
Traffic Volume (VPH)*	250	452	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040)
Peak Hour	AM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

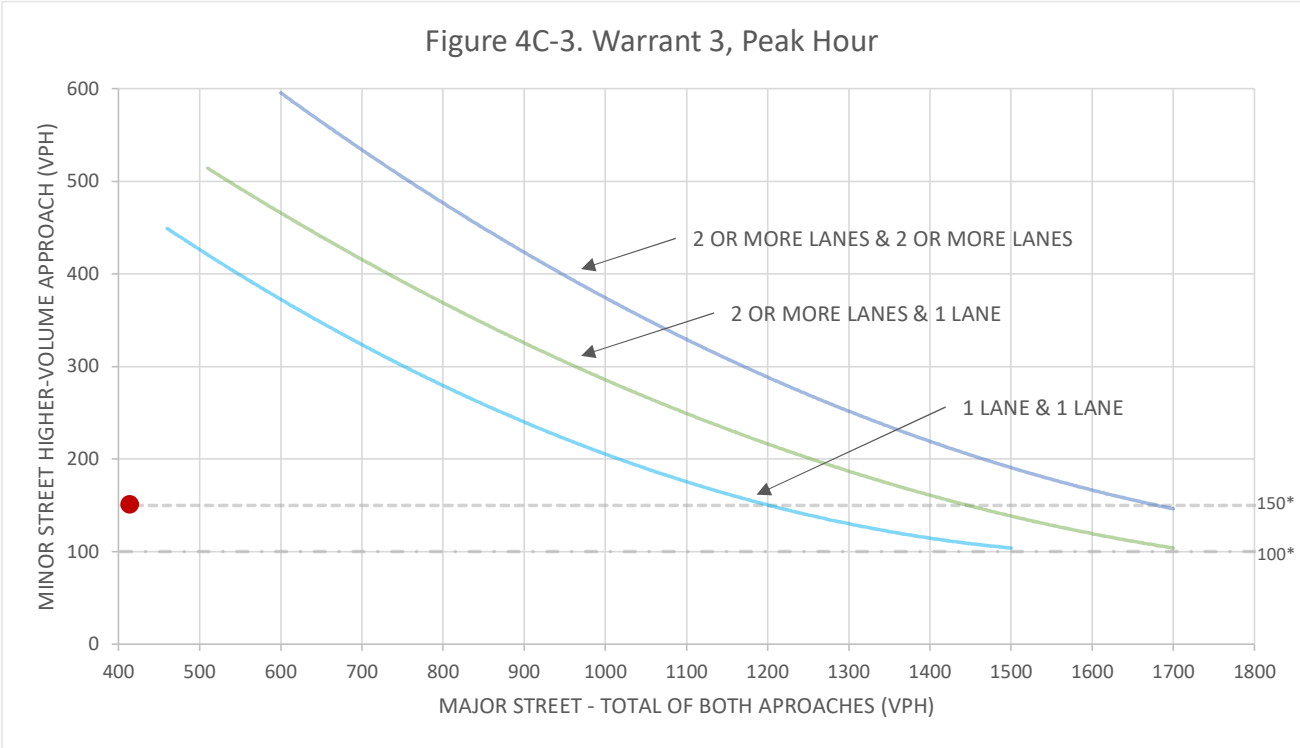
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	955	186	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040)
Peak Hour	AM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

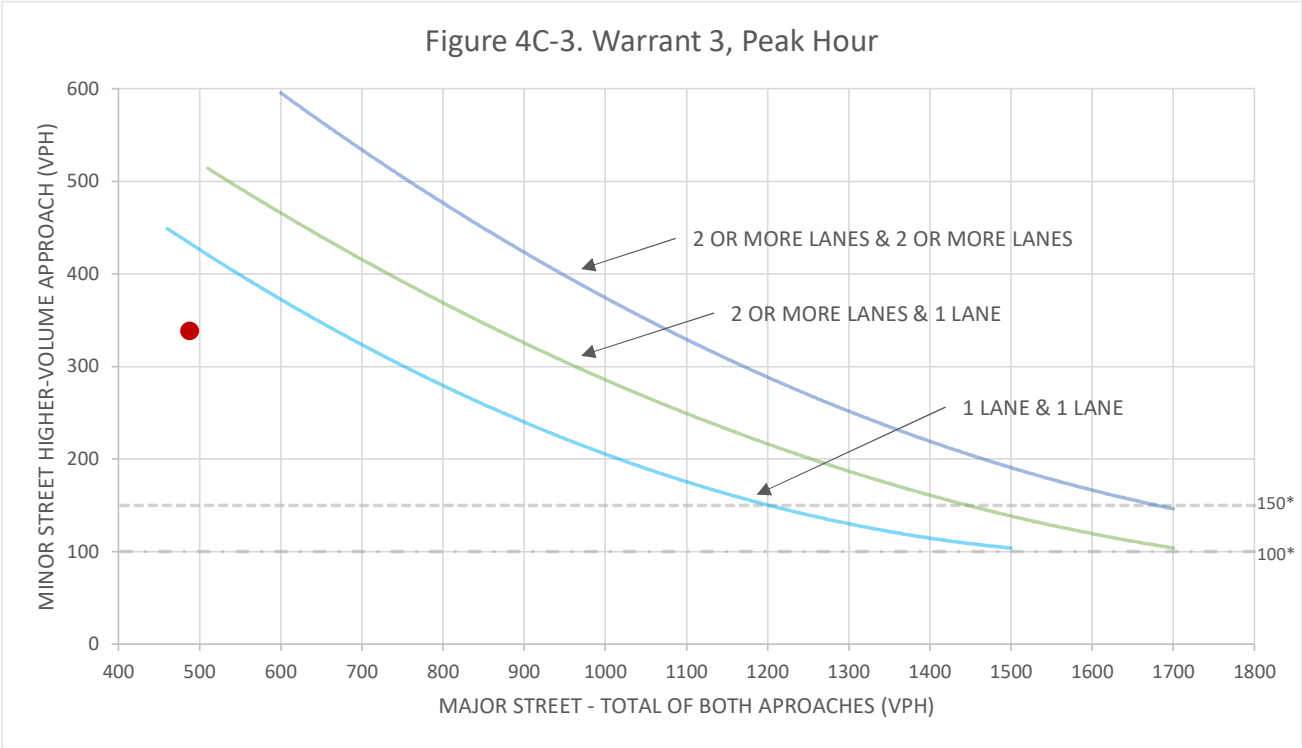
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	<u>No</u>
Traffic Volume (VPH)*	414	151	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040)
Peak Hour	PM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

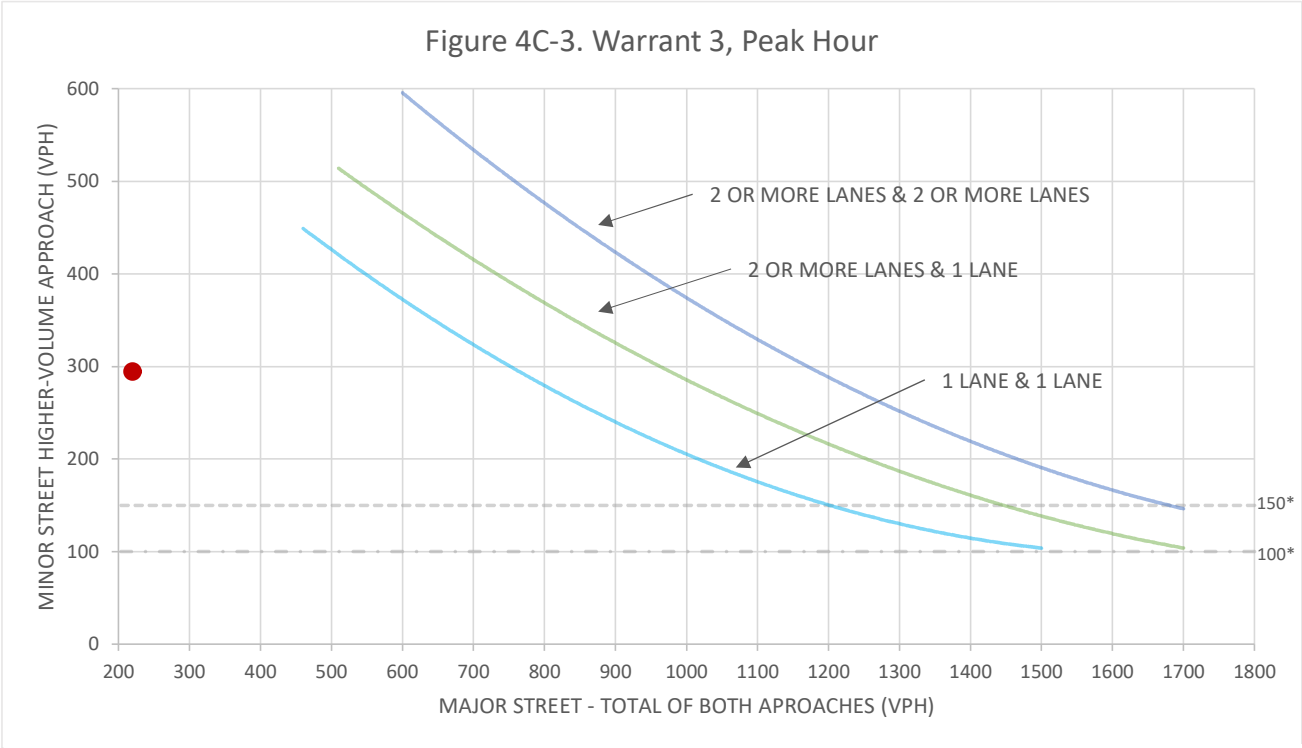
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	488	338	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040)
Peak Hour	PM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

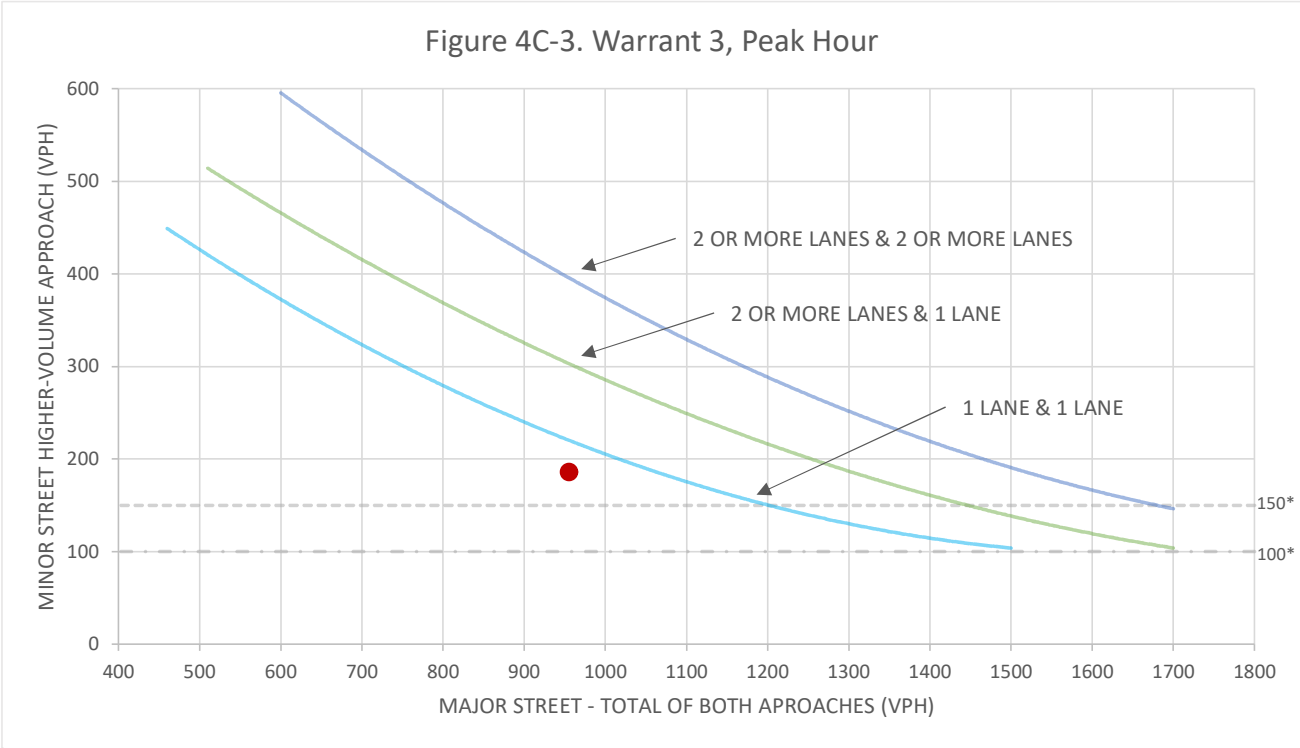
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	No
Traffic Volume (VPH)*	220	294	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040) plus Project
Peak Hour	AM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

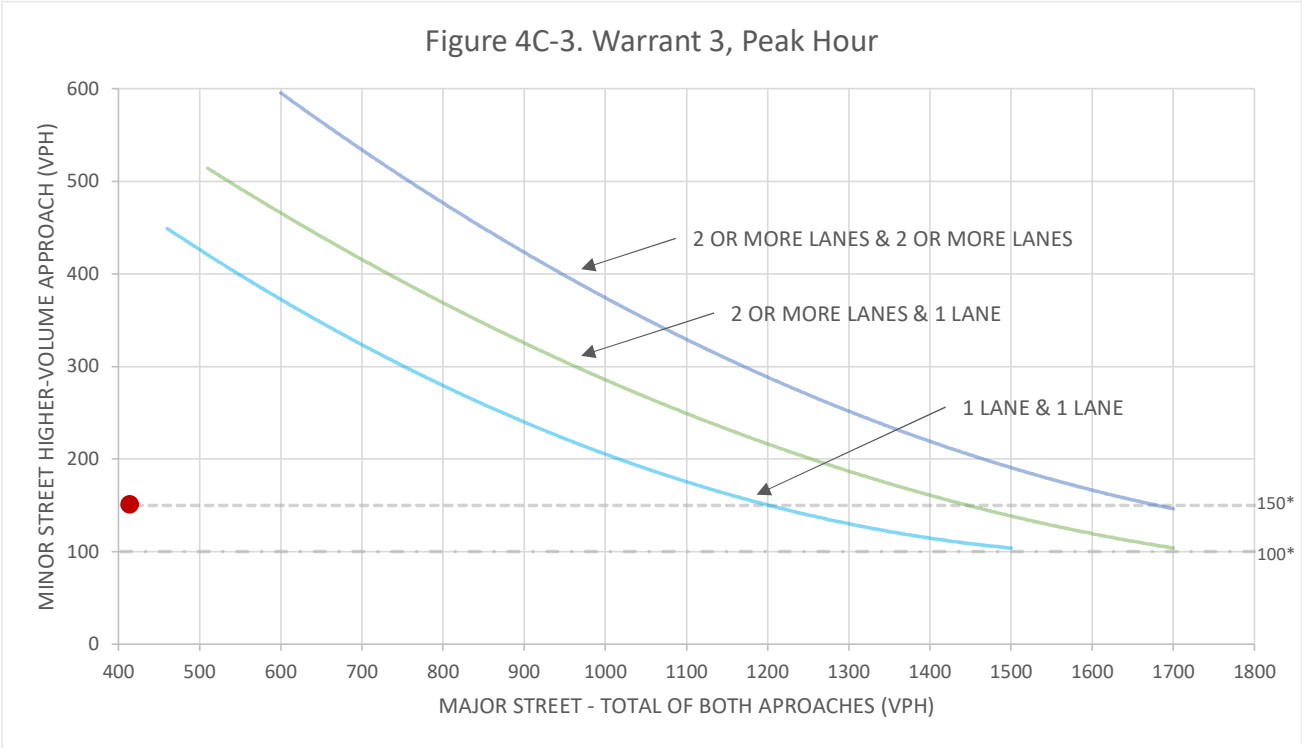
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	955	186	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040) plus Project
Peak Hour	AM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

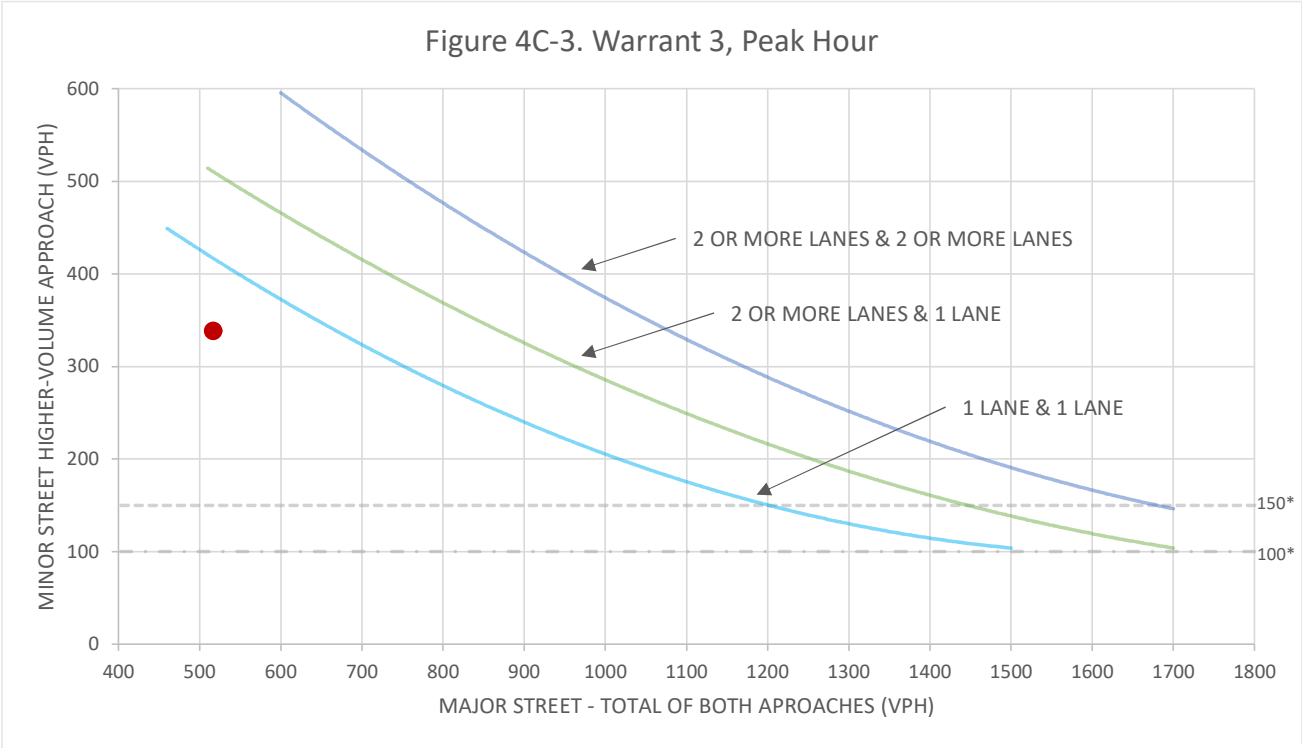
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	<u>No</u>
Traffic Volume (VPH)*	414	151	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040) plus Project
Peak Hour	PM

Intersection #	10
Major Street	Chrysler Drive
Minor Street	Jefferson Drive - East Driveway

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

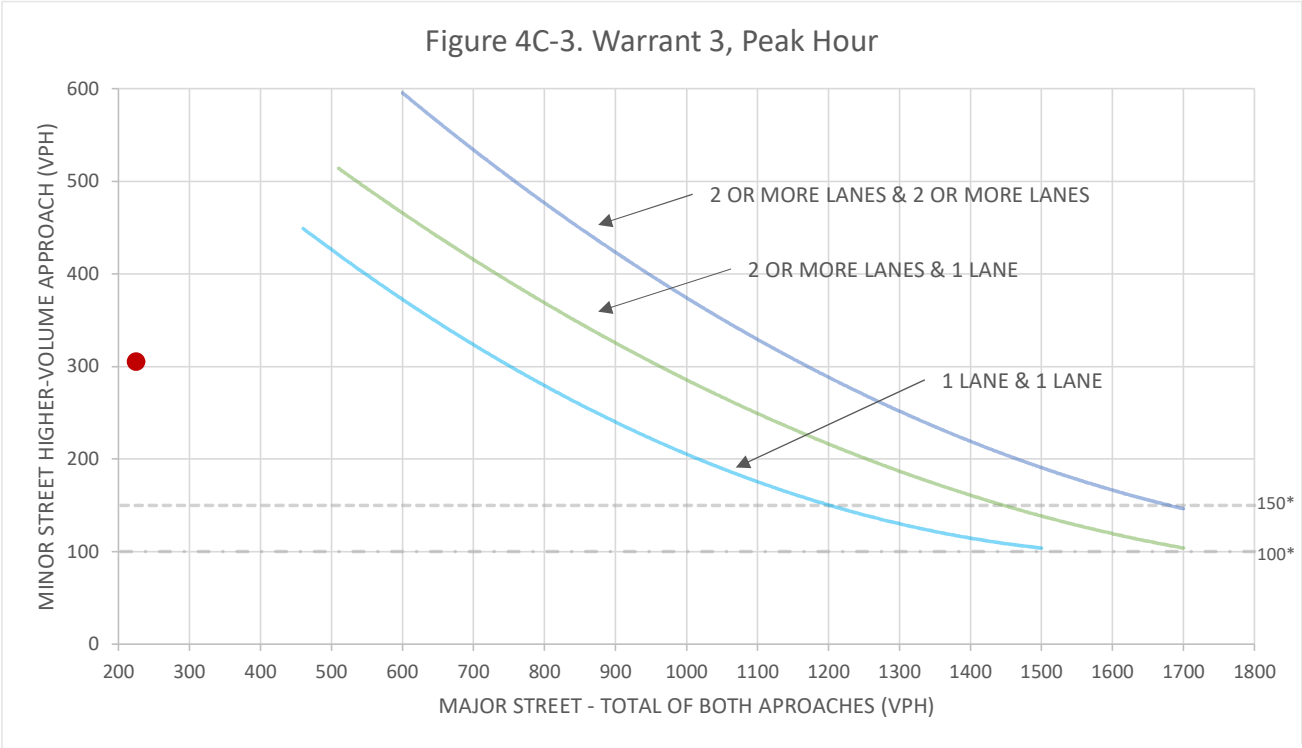
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Jefferson Drive - East Driveway	
Number of Approach Lanes	1	1	<u>No</u>
Traffic Volume (VPH)*	517	338	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Project	123 Independence Drive Project
Scenario	Cumulative (2040) plus Project
Peak Hour	PM

Intersection #	11
Major Street	Chrysler Drive
Minor Street	Independence Drive

N-S	E-W
☒	☐
☐	☒



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Chrysler Drive	Independence Drive	
Number of Approach Lanes	1	2	<u>No</u>
Traffic Volume (VPH)*	225	305	
*Note: Traffic volume for the Major Street approach is the total volume of both approaches. Traffic volume for the Minor Street is the highest volume approach.			

Appendix D

Intersection LOS Worksheets (with Recommended Improvements)

123 Independence Drive Project

Vistro File: P:\...\123

Scenario 23 Near Term (2025) plus Project_wIMP AM

Independence_DUDEK_Base3_AM_#1adj.vistro

Report File: P:\...\2025+Proj AM_with Improvements.pdf

11/14/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.842	50.8	D
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.234	140.0	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Signalized	HCM 6th Edition	WB Right	0.739	20.1	C
11	Chrysler Dr/Independence Dr	Signalized	HCM 6th Edition	EB Left	0.759	31.7	C
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	1.008	136.9	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	50.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1088	10	30	7	8	344	296	2030	558	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	59	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1088	10	30	7	8	347	296	2089	566	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	283	3	8	2	2	90	77	544	147	9
Total Analysis Volume [veh/h]	169	28	1133	10	31	7	8	361	308	2176	590	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing in	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3						1,4			
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	6	0	0	0	0	10	0	0	0	0	6	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall	Yes	No	No		No			No	No		Yes	
Maximum Recall	No	No	No		No			No	No		No	
Pedestrian Recall	No	No	No		Yes			No	Yes		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	101	101	29	29	22	22	55	91	91
g / C, Green / Cycle	0.63	0.63	0.18	0.18	0.14	0.14	0.34	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.30	0.27	0.02	0.01	0.12	0.12	0.21	0.55	0.35
s, saturation flow rate [veh/h]	652	4125	1509	1622	1623	1480	1457	3938	1801
c, Capacity [veh/h]	477	2516	306	295	223	203	478	2041	1021
d1, Uniform Delay [s]	18.89	16.73	54.22	54.26	67.53	67.53	45.37	32.26	22.96
k, delay calibration	0.50	0.50	0.04	0.04	0.17	0.17	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	0.58	0.04	0.04	14.22	15.33	6.53	40.18	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.45	0.08	0.08	0.87	0.87	0.64	1.07	0.61
d, Delay for Lane Group [s/veh]	21.51	17.32	54.27	54.30	81.75	82.86	51.90	72.44	25.70
Lane Group LOS	C	B	D	D	F	F	D	F	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.54	7.65	0.86	0.77	8.64	7.94	11.31	31.24	16.44
50th-Percentile Queue Length [ft/ln]	88.48	191.36	21.54	19.34	216.02	198.52	282.71	781.00	411.08
95th-Percentile Queue Length [veh/ln]	6.37	12.19	1.55	1.39	13.46	12.56	16.82	42.57	23.09
95th-Percentile Queue Length [ft/ln]	159.27	304.80	38.77	34.82	336.54	314.06	420.58	1064.18	577.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.51	21.51	17.32	54.27	54.29	54.30	81.75	82.29	51.90	72.44	25.70	25.70
Movement LOS	C	C	B	D	D	D	F	F	D	F	C	C
d_A, Approach Delay [s/veh]	17.94			54.28			68.46			62.01		
Approach LOS	B			D			E			E		
d_I, Intersection Delay [s/veh]	50.76											
Intersection LOS	D											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.22			71.22			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.772			0.000		
Crosswalk LOS	F			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1092			349			393			954		
d_b, Bicycle Delay [s]	16.50			54.86			52.30			21.88		
I_b,int, Bicycle LOS Score for Intersection	3.754			1.599			2.118			6.181		
Bicycle LOS	D			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	140.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.234

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	266	42	97	291	80	198	349	305	42	58	281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	17.90	100.00	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	2	0	3	8	69	4	2	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	293	44	97	294	88	267	353	307	43	59	281
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	81	12	27	82	24	74	98	85	12	16	78
Total Analysis Volume [veh/h]	0	326	49	108	327	98	297	392	341	48	66	312
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	L	C	R	C
C, Cycle Length [s]	98	98	98	98	98	98	98
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	26	26	26	30
g / C, Green / Cycle	0.31	0.31	0.31	0.27	0.27	0.27	0.30
(v / s)_i Volume / Saturation Flow Rate	0.14	0.14	0.58	0.22	0.23	0.24	0.41
s, saturation flow rate [veh/h]	1374	1272	920	1357	1699	1413	1031
c, Capacity [veh/h]	457	389	326	362	453	377	314
d1, Uniform Delay [s]	27.15	27.52	38.34	33.71	34.23	34.67	34.07
k, delay calibration	0.11	0.11	0.50	0.24	0.27	0.30	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	0.87	299.76	9.77	11.51	18.67	180.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.47	1.64	0.82	0.86	0.90	1.36
d, Delay for Lane Group [s/veh]	27.76	28.40	338.10	43.48	45.74	53.35	214.34
Lane Group LOS	C	C	F	D	D	D	F
Critical Lane Group	No	No	Yes	No	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.64	3.51	35.07	7.48	10.16	9.63	22.97
50th-Percentile Queue Length [ft/ln]	91.00	87.66	876.77	187.03	253.98	240.73	574.14
95th-Percentile Queue Length [veh/ln]	6.55	6.31	56.32	11.97	15.39	14.72	36.18
95th-Percentile Queue Length [ft/ln]	163.81	157.79	1407.91	299.18	384.66	367.96	904.48

Movement, Approach, & Intersection Results

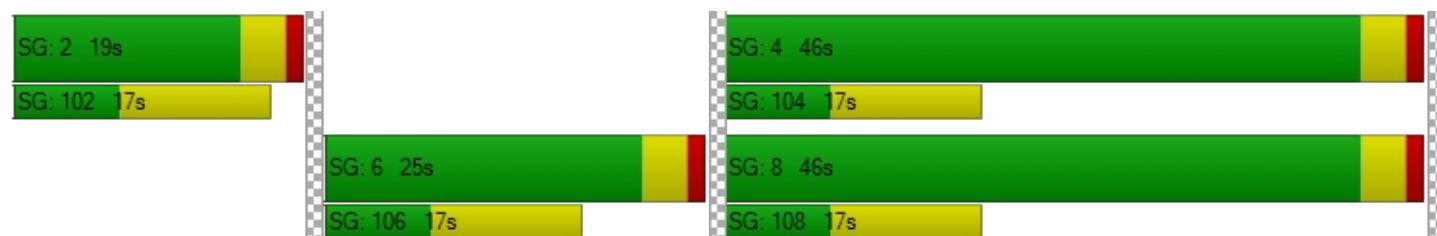
d_M, Delay for Movement [s/veh]	27.76	28.02	28.40	338.10	338.10	338.10	43.48	45.74	53.35	214.34	214.34	214.34
Movement LOS	C	C	C	F	F	F	D	D	D	F	F	F
d_A, Approach Delay [s/veh]	28.07			338.10			47.61			214.34		
Approach LOS	C			F			D			F		
d_I, Intersection Delay [s/veh]	140.05											
Intersection LOS	F											
Intersection V/C	1.234											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	38.69			38.69			38.69			38.69		
I_p,int, Pedestrian LOS Score for Intersection	2.299			2.421			2.426			2.415		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	856			856			428			306		
d_b, Bicycle Delay [s]	16.06			16.06			30.32			35.22		
I_b,int, Bicycle LOS Score for Intersection	1.869			2.439			3.259			2.263		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Signalized	Delay (sec / veh):	20.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	153	113	304	334	0	0	0	0	44	0	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	0	0	1	4	13	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	169	113	304	335	4	13	0	0	44	0	155
Peak Hour Factor	1.0000	0.9100	0.9100	0.9100	0.9100	1.0000	1.0000	1.0000	1.0000	0.9100	1.0000	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	46	31	84	92	1	3	0	0	12	0	43
Total Analysis Volume [veh/h]	0	186	124	334	368	4	13	0	0	48	0	170
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	94	0	0	94	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	6	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	90	90	22	22
g / C, Green / Cycle	0.75	0.75	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.24	0.58	0.02	0.15
s, saturation flow rate [veh/h]	1268	1208	556	1413
c, Capacity [veh/h]	981	950	162	296
d1, Uniform Delay [s]	4.96	7.72	41.09	47.19
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	5.24	0.97	15.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.74	0.08	0.74
d, Delay for Lane Group [s/veh]	5.81	12.96	42.06	62.36
Lane Group LOS	A	B	D	E
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.47	9.32	0.37	7.57
50th-Percentile Queue Length [ft/ln]	61.66	233.06	9.21	189.29
95th-Percentile Queue Length [veh/ln]	4.44	14.33	0.66	12.08
95th-Percentile Queue Length [ft/ln]	110.98	358.24	16.58	302.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	5.81	5.81	5.81	12.96	12.96	12.96	42.06	42.06	42.06	62.36	62.36	62.36
Movement LOS	A	A	A	B	B	B	D	D	D	E	E	E
d_A, Approach Delay [s/veh]	5.81			12.96			42.06			62.36		
Approach LOS	A			B			D			E		
d_I, Intersection Delay [s/veh]	20.12											
Intersection LOS	C											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			51.34			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			1.738			0.000		
Crosswalk LOS	F			F			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1500			1500			367			367		
d_b, Bicycle Delay [s]	3.75			3.75			40.02			40.02		
I_b,int, Bicycle LOS Score for Intersection	2.071			2.725			1.581			1.919		
Bicycle LOS	B			B			A			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	70	52	0	35	155	188	211	3	33	1	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.00	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	52	0	35	155	189	227	3	33	1	0	3
Peak Hour Factor	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	18	0	12	54	66	79	1	11	0	0	1
Total Analysis Volume [veh/h]	97	72	0	49	215	263	315	4	46	1	0	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	35			0			35			0		
v_di, Inbound Pedestrian Volume crossing	35			0			35			0		
v_co, Outbound Pedestrian Volume crossing	8			68			69			9		
v_ci, Inbound Pedestrian Volume crossing	9			69			68			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	77	0	0	77	0	0	43	0	0	43	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	73	73	39	39
g / C, Green / Cycle	0.61	0.61	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.27	0.48	0.28	0.00
s, saturation flow rate [veh/h]	617	1094	1316	1580
c, Capacity [veh/h]	423	698	483	549
d1, Uniform Delay [s]	14.83	17.50	37.52	27.43
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.81	7.44	10.48	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.75	0.76	0.01
d, Delay for Lane Group [s/veh]	17.64	24.94	48.00	27.46
Lane Group LOS	B	C	D	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.29	11.54	11.41	0.10
50th-Percentile Queue Length [ft/ln]	82.17	288.52	285.13	2.60
95th-Percentile Queue Length [veh/ln]	5.92	17.11	16.94	0.19
95th-Percentile Queue Length [ft/ln]	147.91	427.80	423.59	4.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.64	17.64	17.64	24.94	24.94	24.94	48.00	48.00	48.00	27.46	27.46	27.46
Movement LOS	B	B	B	C	C	C	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	17.64			24.94			48.00			27.46		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	31.69											
Intersection LOS	C											
Intersection V/C	0.759											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	51.34			51.34			51.34			51.34		
I_p,int, Pedestrian LOS Score for Intersection	1.942			2.626			2.163			1.823		
Crosswalk LOS	A			B			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1217			1217			650			650		
d_b, Bicycle Delay [s]	9.20			9.20			27.34			27.34		
I_b,int, Bicycle LOS Score for Intersection	1.838			2.429			2.162			1.568		
Bicycle LOS	A			B			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	136.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.008

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	210	456	277	42	93	79	382	459	172	1167	2217	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	0	19	9	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	213	456	277	42	93	63	382	478	75	1167	2222	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	116	71	11	24	16	97	122	19	298	567	18
Total Analysis Volume [veh/h]	217	465	283	43	95	64	390	488	77	1191	2267	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing in	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	16	16	45	9	9	9	15	40	40	25	50	50
g / C, Green / Cycle	0.15	0.14	0.41	0.08	0.08	0.08	0.14	0.37	0.37	0.23	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.13	0.30	0.16	0.03	0.08	0.06	0.12	0.10	0.05	0.36	0.45	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1078	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	248	223	722	104	100	88	474	1805	535	755	2277	733
d1, Uniform Delay [s]	45.87	47.26	22.91	48.11	50.37	49.35	46.09	24.54	23.34	42.62	30.01	17.24
k, delay calibration	0.20	0.45	0.11	0.11	0.11	0.14	0.11	0.11	0.11	0.28	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.79	501.44	0.35	2.61	30.14	13.63	3.66	0.08	0.12	263.66	7.82	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	2.08	0.39	0.41	0.95	0.73	0.82	0.27	0.14	1.58	1.00	0.10
d, Delay for Lane Group [s/veh]	61.66	548.70	23.26	50.72	80.50	62.97	49.75	24.62	23.47	306.27	37.83	17.30
Lane Group LOS	E	F	C	D	F	E	D	C	C	F	D	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.75	18.52	1.68	1.22	1.74	2.08	5.41	2.99	1.36	37.77	20.67	1.07
50th-Percentile Queue Length [ft/ln]	168.74	463.00	41.95	30.42	43.52	51.92	135.14	74.78	33.97	944.14	516.80	26.69
95th-Percentile Queue Length [veh/ln]	11.01	31.40	3.02	2.19	3.13	3.74	9.22	5.38	2.45	58.56	28.13	1.92
95th-Percentile Queue Length [ft/ln]	275.26	784.96	75.52	54.76	78.33	93.45	230.46	134.60	61.14	1464.12	703.22	48.04

Movement, Approach, & Intersection Results

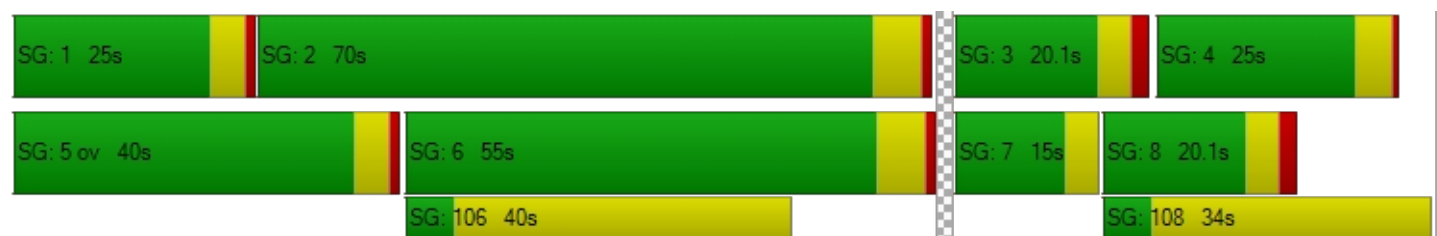
d_M, Delay for Movement [s/veh]	61.66	548.70	23.26	50.72	80.50	62.97	49.75	24.62	23.47	306.27	37.83	17.30
Movement LOS	E	F	C	D	F	E	D	C	C	F	D	B
d_A, Approach Delay [s/veh]	285.09			68.61			34.79			127.95		
Approach LOS	F			E			C			F		
d_I, Intersection Delay [s/veh]	136.92											
Intersection LOS	F											
Intersection V/C	1.008											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	46.41			0.00			46.41			0.00		
I_p,int, Pedestrian LOS Score for Intersection	3.121			0.000			3.327			0.000		
Crosswalk LOS	C			F			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	374			273			890			1163		
d_b, Bicycle Delay [s]	36.37			41.07			16.95			9.65		
I_b,int, Bicycle LOS Score for Intersection	2.356			1.739			2.143			3.502		
Bicycle LOS	B			A			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



123 Independence Drive Project

Vistro File: P:\...\123

Scenario 23 Near Term (2025) plus Project_wIMP PM

Independence_DUDEK_Base3_PM_#1adj.vistro

Report File: P:\...\2025+Proj PM_with Improvements.pdf

11/14/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	EB Thru	0.876	63.5	E
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Left	0.812	45.5	D
10	Chrysler Dr/Jefferson Dr - East Driveway	Signalized	HCM 6th Edition	WB Right	0.588	22.1	C
11	Chrysler Dr/Independence Dr	Signalized	HCM 6th Edition	NB Thru	0.581	21.7	C
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Right	1.076	114.3	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	63.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	179	40	1610	12	31	5	9	607	208	2131	455	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	0	0	7	0	34	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1611	12	31	5	9	614	208	2165	459	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	10	420	3	8	1	2	160	54	564	120	4
Total Analysis Volume [veh/h]	186	42	1678	13	32	5	9	640	217	2255	478	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3						1,4			
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	68	24	24	0	32	25	32	36	32	36	68	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No	No		Yes	
Maximum Recall		No	No		No			No	No		No	
Pedestrian Recall		No	No		Yes			No	Yes		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	25	92	29	29	31	31	64	66	66
g / C, Green / Cycle	0.15	0.58	0.18	0.18	0.19	0.19	0.40	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.12	0.40	0.02	0.01	0.18	0.18	0.14	0.44	0.29
s, saturation flow rate [veh/h]	1826	4190	1495	1646	1891	1724	1561	5150	1675
c, Capacity [veh/h]	281	2323	305	299	365	333	600	2119	689
d1, Uniform Delay [s]	65.48	26.49	54.30	54.32	63.50	63.50	35.13	47.08	39.27
k, delay calibration	0.42	0.50	0.04	0.04	0.38	0.38	0.23	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.15	1.98	0.04	0.04	26.82	28.57	0.78	39.23	6.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.72	0.09	0.08	0.93	0.93	0.36	1.06	0.72
d, Delay for Lane Group [s/veh]	84.62	28.47	54.35	54.36	90.31	92.06	35.91	86.32	45.53
Lane Group LOS	F	C	D	D	F	F	D	F	D
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.55	16.21	0.90	0.80	16.37	15.08	6.28	35.60	17.44
50th-Percentile Queue Length [ft/ln]	263.66	405.28	22.57	20.05	409.23	376.93	157.08	890.09	436.10
95th-Percentile Queue Length [veh/ln]	15.87	22.81	1.62	1.44	23.00	21.45	10.39	47.55	24.29
95th-Percentile Queue Length [ft/ln]	396.81	570.36	40.62	36.10	575.11	536.13	259.85	1188.77	607.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	84.62	84.62	28.47	54.35	54.36	54.36	90.31	91.16	35.91	86.32	45.53	45.53
Movement LOS	F	F	C	D	D	D	F	F	D	F	D	D
d_A, Approach Delay [s/veh]	35.19			54.35			77.31			79.00		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	63.52											
Intersection LOS	E											
Intersection V/C	0.876											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.628			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	243			349			405			779		
d_b, Bicycle Delay [s]	61.78			54.89			51.08			29.84		
I_b,int, Bicycle LOS Score for Intersection	4.705			1.601			2.274			6.094		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.812

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	490	25	336	50	30	344	159	3	32	15	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	1	0	11	22	36	2	6	2	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	508	26	336	61	52	380	161	9	34	18	114
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	127	7	84	15	13	95	40	2	9	5	29
Total Analysis Volume [veh/h]	0	508	26	336	61	52	380	161	9	34	18	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing in	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	20	20	20	13	13
g / C, Green / Cycle	0.40	0.40	0.40	0.40	0.40	0.27	0.27	0.27	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.43	0.04	0.17	0.24	0.10	0.01	0.03	0.15
s, saturation flow rate [veh/h]	1710	1525	783	1710	305	1609	1686	1326	985	898
c, Capacity [veh/h]	732	610	293	684	122	433	454	357	168	153
d1, Uniform Delay [s]	16.17	16.19	31.15	14.01	16.28	26.22	22.15	20.17	26.71	30.23
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.15	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.45	97.80	0.06	2.34	7.80	0.47	0.03	0.58	12.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.41	1.15	0.09	0.43	0.88	0.35	0.03	0.20	0.86
d, Delay for Lane Group [s/veh]	16.50	16.64	128.95	14.06	18.62	34.02	22.62	20.20	27.29	43.17
Lane Group LOS	B	B	F	B	B	C	C	C	C	D
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.30	2.98	13.22	0.62	0.68	7.07	2.25	0.11	0.53	2.78
50th-Percentile Queue Length [ft/ln]	82.39	74.39	330.59	15.42	17.00	176.74	56.33	2.86	13.33	69.39
95th-Percentile Queue Length [veh/ln]	5.93	5.36	20.86	1.11	1.22	11.43	4.06	0.21	0.96	5.00
95th-Percentile Queue Length [ft/ln]	148.31	133.89	521.38	27.75	30.60	285.76	101.40	5.15	24.00	124.91

Movement, Approach, & Intersection Results

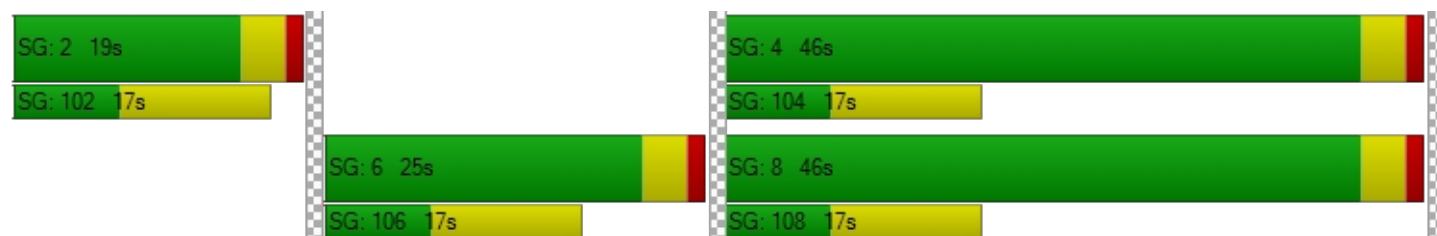
d_M, Delay for Movement [s/veh]	16.50	16.56	16.64	128.95	14.06	18.62	34.02	22.62	20.20	27.29	43.17	43.17
Movement LOS	B	B	B	F	B	B	C	C	C	C	D	D
d_A, Approach Delay [s/veh]	16.57			100.56			30.45			39.92		
Approach LOS	B			F			C			D		
d_I, Intersection Delay [s/veh]	45.54											
Intersection LOS	D											
Intersection V/C	0.812											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	27.24			27.24			27.24			27.24		
I_p,int, Pedestrian LOS Score for Intersection	2.137			2.573			2.272			2.632		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1122			1122			561			401		
d_b, Bicycle Delay [s]	7.22			7.22			19.38			23.94		
I_b,int, Bicycle LOS Score for Intersection	2.000			2.300			2.467			1.834		
Bicycle LOS	B			B			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway**

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	301	225	55	30	0	0	0	0	15	0	214
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	5	13	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	312	225	55	35	13	8	0	0	15	0	214
Peak Hour Factor	1.0000	0.8500	0.8500	0.8500	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	92	66	16	10	3	2	0	0	4	0	63
Total Analysis Volume [veh/h]	0	367	265	65	41	13	8	0	0	18	0	252
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	81	0	0	81	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	6	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	77	77	35	35
g / C, Green / Cycle	0.64	0.64	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.40	0.14	0.01	0.19
s, saturation flow rate [veh/h]	1582	825	593	1431
c, Capacity [veh/h]	1045	576	233	450
d1, Uniform Delay [s]	12.83	8.63	30.85	37.02
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.60	0.81	0.27	5.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.21	0.03	0.60
d, Delay for Lane Group [s/veh]	15.43	9.45	31.12	42.86
Lane Group LOS	B	A	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.29	1.34	0.19	7.69
50th-Percentile Queue Length [ft/ln]	257.22	33.46	4.69	192.17
95th-Percentile Queue Length [veh/ln]	15.55	2.41	0.34	12.23
95th-Percentile Queue Length [ft/ln]	388.73	60.23	8.45	305.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.43	15.43	15.43	9.45	9.45	9.45	31.12	31.12	31.12	42.86	42.86	42.86
Movement LOS	B	B	B	A	A	A	C	C	C	D	D	D
d_A, Approach Delay [s/veh]	15.43			9.45			31.12			42.86		
Approach LOS	B			A			C			D		
d_I, Intersection Delay [s/veh]	22.05											
Intersection LOS	C											
Intersection V/C	0.588											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			51.34			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			1.740			0.000		
Crosswalk LOS	F			F			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1283			1283			583			583		
d_b, Bicycle Delay [s]	7.70			7.70			30.10			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.602			1.756			1.573			2.005		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	53	147	0	1	11	34	358	7	76	3	0	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.00	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	5	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	147	0	1	11	39	369	7	76	3	0	22
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	45	0	0	3	12	113	2	23	1	0	7
Total Analysis Volume [veh/h]	65	179	0	1	13	48	450	9	93	4	0	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	16			0			15			0		
v_di, Inbound Pedestrian Volume crossing in	15			0			16			0		
v_co, Outbound Pedestrian Volume crossing	17			0			1			17		
v_ci, Inbound Pedestrian Volume crossing mi	17			1			0			17		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	31	0	0	31	0	0	79	0	0	79	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	75	75
g / C, Green / Cycle	0.25	0.25	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.16	0.04	0.42	0.02
s, saturation flow rate [veh/h]	1543	1500	1307	1466
c, Capacity [veh/h]	420	401	951	1036
d1, Uniform Delay [s]	36.93	32.66	9.33	5.69
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.76	0.82	2.59	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.15	0.58	0.03
d, Delay for Lane Group [s/veh]	42.69	33.48	11.92	5.74
Lane Group LOS	D	C	B	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.50	1.40	7.28	0.24
50th-Percentile Queue Length [ft/ln]	162.39	34.89	182.12	5.98
95th-Percentile Queue Length [veh/ln]	10.68	2.51	11.71	0.43
95th-Percentile Queue Length [ft/ln]	266.89	62.80	292.78	10.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.69	42.69	42.69	33.48	33.48	33.48	11.92	11.92	11.92	5.74	5.74	5.74
Movement LOS	D	D	D	C	C	C	B	B	B	A	A	A
d_A, Approach Delay [s/veh]	42.69			33.48			11.92			5.74		
Approach LOS	D			C			B			A		
d_I, Intersection Delay [s/veh]	21.65											
Intersection LOS	C											
Intersection V/C	0.581											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	46.37			46.37			46.37			46.37		
I_p,int, Pedestrian LOS Score for Intersection	1.904			2.716			2.089			1.744		
Crosswalk LOS	A			B			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	491			491			1364			1364		
d_b, Bicycle Delay [s]	31.31			31.31			5.57			5.57		
I_b,int, Bicycle LOS Score for Intersection	1.962			1.662			2.470			1.611		
Bicycle LOS	A			A			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	114.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.076

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	147	108	1112	172	217	133	122	2046	163	583	822	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	0	0	0	0	11	5	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	156	108	1112	172	217	117	122	2057	62	583	838	34
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	28	287	44	56	30	31	530	16	150	216	9
Total Analysis Volume [veh/h]	161	111	1146	177	224	121	126	2121	64	601	864	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing in	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	12	15	43	9	13	13	8	40	40	24	56	56
g / C, Green / Cycle	0.11	0.14	0.40	0.08	0.12	0.12	0.07	0.37	0.37	0.22	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.62	0.10	0.14	0.08	0.05	0.42	0.04	0.18	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1479	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	194	206	740	146	191	176	176	1884	543	733	2580	840
d1, Uniform Delay [s]	46.98	43.23	32.19	49.49	47.56	45.34	49.09	33.94	22.32	40.08	15.05	12.70
k, delay calibration	0.11	0.11	0.50	0.42	0.20	0.29	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.66	2.18	253.39	138.12	98.19	11.93	5.34	58.52	0.10	2.34	0.08	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.54	1.55	1.21	1.17	0.69	0.72	1.13	0.12	0.82	0.33	0.04
d, Delay for Lane Group [s/veh]	55.64	45.41	285.58	187.61	145.75	57.28	54.43	92.46	22.41	42.41	15.12	12.72
Lane Group LOS	E	D	F	F	F	E	D	F	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	4.60	1.41	23.35	9.57	5.20	3.72	1.79	26.14	1.08	7.75	4.02	0.42
50th-Percentile Queue Length [ft/ln]	115.03	35.24	583.79	239.23	130.07	92.99	44.70	653.45	27.06	193.76	100.50	10.38
95th-Percentile Queue Length [veh/ln]	8.12	2.54	39.04	15.64	9.36	6.70	3.22	37.36	1.95	12.32	7.24	0.75
95th-Percentile Queue Length [ft/ln]	202.98	63.43	976.02	390.93	234.12	167.38	80.46	934.01	48.70	307.90	180.91	18.68

Movement, Approach, & Intersection Results

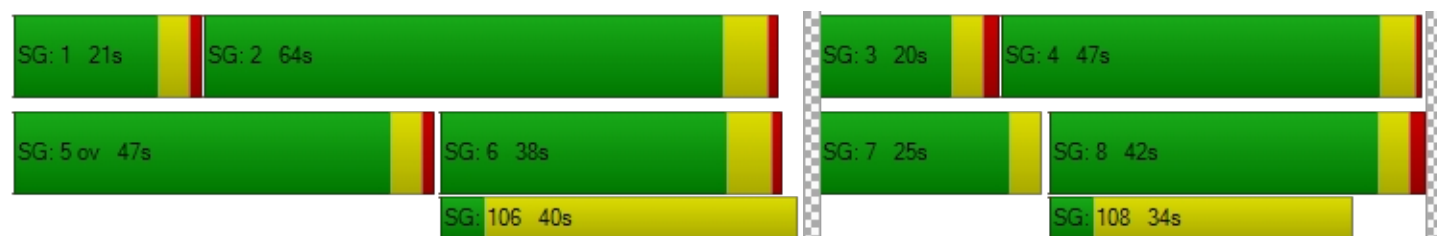
d_M, Delay for Movement [s/veh]	55.64	45.41	285.58	187.61	145.75	57.28	54.43	92.46	22.41	42.41	15.12	12.72
Movement LOS	E	D	F	F	F	E	D	F	C	D	B	B
d_A, Approach Delay [s/veh]	240.68			139.44			88.44			26.00		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	114.32											
Intersection LOS	F											
Intersection V/C	1.076											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.31	0.00	45.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.119	0.000	3.324	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	790	684	593	1075
d_b, Bicycle Delay [s]	19.75	23.38	26.68	11.53
I_b,int, Bicycle LOS Score for Intersection	2.729	2.003	2.889	2.385
Bicycle LOS	B	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



123 Independence Drive Project

Vistro File: P:\...\123

Scenario 24 Cumulative (2040) plus Project_wIMP AM

Independence_DUDEK_Base3_AM_#1adj.vistro

Report File: P:\...\2040+Proj AM_with Improvements.pdf

11/14/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.842	54.5	D
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.443	252.7	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Signalized	HCM 6th Edition	WB Right	0.842	19.9	B
11	Chrysler Dr/Independence Dr	Signalized	HCM 6th Edition	EB Left	0.612	15.5	B
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.826	46.5	D
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	NB Thru	1.171	186.6	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 54.5
 Level Of Service: D
 Volume to Capacity (v/c): 0.842

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1389	10	30	7	8	532	296	2035	702	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	3	0	59	8	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1389	10	30	7	8	535	296	2094	710	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	362	3	8	2	2	139	77	545	185	9
Total Analysis Volume [veh/h]	169	28	1447	10	31	7	8	557	308	2181	740	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			22			0			22		
v_di, Inbound Pedestrian Volume crossing in	0			22			0			22		
v_co, Outbound Pedestrian Volume crossing	0			1			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			13			25			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3						1,4			
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	74	19	19	0	32	25	32	35	32	35	74	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No	No		Yes	
Maximum Recall		No	No		No			No	No		No	
Pedestrian Recall		No	No		Yes			No	Yes		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	18	92	30	30	31	31	64	72	72
g / C, Green / Cycle	0.11	0.57	0.18	0.18	0.19	0.19	0.40	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.02	0.01	0.18	0.18	0.21	0.43	0.43
s, saturation flow rate [veh/h]	1822	4115	1512	1622	1625	1480	1460	5075	1805
c, Capacity [veh/h]	206	2267	311	300	314	286	566	2278	810
d1, Uniform Delay [s]	70.58	24.80	53.86	53.90	63.64	63.64	37.76	42.61	42.58
k, delay calibration	0.50	0.50	0.04	0.04	0.41	0.41	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	52.60	1.39	0.04	0.04	33.25	35.28	3.73	11.20	22.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.64	0.08	0.08	0.94	0.94	0.54	0.96	0.96
d, Delay for Lane Group [s/veh]	123.18	26.19	53.90	53.94	96.89	98.92	41.49	53.80	65.24
Lane Group LOS	F	C	D	D	F	F	D	D	E
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	11.08	12.96	0.86	0.77	14.81	13.66	10.02	29.88	34.41
50th-Percentile Queue Length [ft/ln]	277.07	323.90	21.48	19.26	370.33	341.48	250.51	746.92	860.31
95th-Percentile Queue Length [veh/ln]	16.54	18.86	1.55	1.39	21.13	19.72	15.21	38.84	44.03
95th-Percentile Queue Length [ft/ln]	413.56	471.48	38.67	34.66	528.13	493.02	380.29	971.02	1100.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	123.18	123.18	26.19	53.90	53.92	53.94	96.89	97.88	41.49	53.80	65.24	65.24
Movement LOS	F	F	C	D	D	D	F	F	D	D	E	E
d_A, Approach Delay [s/veh]	37.81			53.92			77.97			56.80		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	54.47											
Intersection LOS	D											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.677			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	180			349			393			854		
d_b, Bicycle Delay [s]	66.28			54.89			52.33			26.29		
I_b,int, Bicycle LOS Score for Intersection	4.272			1.599			2.280			6.437		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	252.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.443

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	228	23	181	358	77	123	310	344	38	63	190
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	17.90	100.00	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	2	0	3	8	69	4	2	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	255	25	181	361	85	192	314	346	39	64	190
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	71	7	50	100	24	53	87	96	11	18	53
Total Analysis Volume [veh/h]	0	283	28	201	401	94	213	349	384	43	71	211
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	5			13			14			5		
v_di, Inbound Pedestrian Volume crossing	5			14			13			5		
v_co, Outbound Pedestrian Volume crossing	1			0			1			0		
v_ci, Inbound Pedestrian Volume crossing	1			0			1			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	61	0	0	61	0	0	30	0	0	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C	R	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.11	0.12	0.79	0.34	0.27	0.31
s, saturation flow rate [veh/h]	1418	1289	876	1668	1413	1043
c, Capacity [veh/h]	454	380	304	490	416	306
d1, Uniform Delay [s]	28.42	28.62	41.97	35.92	34.77	35.96
k, delay calibration	0.11	0.11	0.50	0.50	0.39	0.49
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.47	0.66	591.07	87.41	24.27	68.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.39	2.29	1.15	0.92	1.06
d, Delay for Lane Group [s/veh]	28.90	29.28	633.04	123.33	59.05	104.56
Lane Group LOS	C	C	F	F	E	F
Critical Lane Group	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.16	2.96	57.61	23.78	11.80	13.23
50th-Percentile Queue Length [ft/ln]	78.98	73.96	1440.30	594.47	295.07	330.73
95th-Percentile Queue Length [veh/ln]	5.69	5.33	94.09	34.49	17.44	19.90
95th-Percentile Queue Length [ft/ln]	142.17	133.14	2352.35	862.36	435.93	497.41

Movement, Approach, & Intersection Results

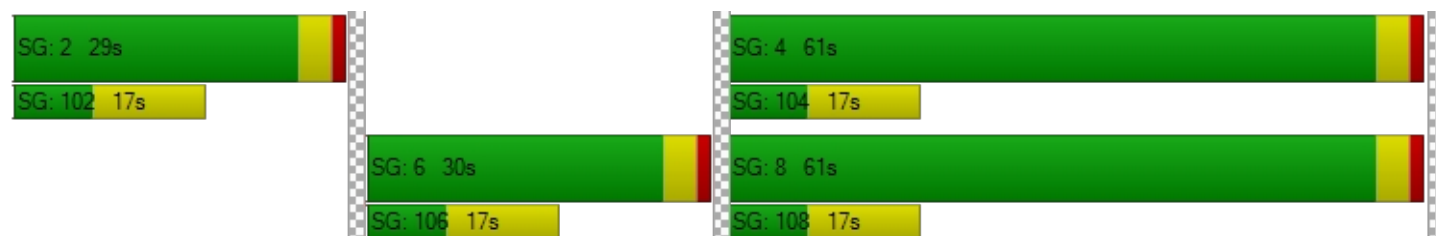
d_M, Delay for Movement [s/veh]	28.90	29.06	29.28	633.04	633.04	633.04	123.33	123.33	59.05	104.56	104.56	104.56
Movement LOS	C	C	C	F	F	F	F	F	E	F	F	F
d_A, Approach Delay [s/veh]	29.08			633.04			97.24			104.56		
Approach LOS	C			F			F			F		
d_I, Intersection Delay [s/veh]	252.68											
Intersection LOS	F											
Intersection V/C	1.443											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	40.53			40.53			40.53			40.53		
I_p,int, Pedestrian LOS Score for Intersection	2.316			2.402			2.307			2.447		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1119			1119			510			491		
d_b, Bicycle Delay [s]	9.88			9.88			28.26			29.01		
I_b,int, Bicycle LOS Score for Intersection	1.816			2.708			3.121			2.096		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	105	105	442	303	0	0	0	0	27	0	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	26.10	7.10	2.70	10.30	2.00	2.00	2.00	2.00	0.00	2.00	18.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	0	0	1	4	13	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	121	105	442	304	4	13	0	0	27	0	159
Peak Hour Factor	1.0000	0.9100	0.9100	0.9100	0.9100	1.0000	1.0000	1.0000	1.0000	0.9100	1.0000	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	33	29	121	84	1	3	0	0	7	0	44
Total Analysis Volume [veh/h]	0	133	115	486	334	4	13	0	0	30	0	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	57	0	0	57	0	0	13	0	0	13	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	6	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	9	9
g / C, Green / Cycle	0.76	0.76	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.20	0.70	0.02	0.14
s, saturation flow rate [veh/h]	1255	1179	753	1429
c, Capacity [veh/h]	1001	975	200	243
d1, Uniform Delay [s]	2.57	5.95	27.05	30.92
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	8.95	0.63	28.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.25	0.85	0.07	0.84
d, Delay for Lane Group [s/veh]	3.16	14.90	27.67	59.51
Lane Group LOS	A	B	C	E
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.73	6.17	0.22	5.35
50th-Percentile Queue Length [ft/ln]	18.31	154.33	5.52	133.66
95th-Percentile Queue Length [veh/ln]	1.32	10.25	0.40	9.14
95th-Percentile Queue Length [ft/ln]	32.96	256.20	9.93	228.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	3.16	3.16	3.16	14.90	14.90	14.90	27.67	27.67	27.67	59.51	59.51	59.51
Movement LOS	A	A	A	B	B	B	C	C	C	E	E	E
d_A, Approach Delay [s/veh]	3.16			14.90			27.67			59.51		
Approach LOS	A			B			C			E		
d_I, Intersection Delay [s/veh]	19.86											
Intersection LOS	B											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			26.58			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			1.712			0.000		
Crosswalk LOS	F			F			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1514			1514			257			257		
d_b, Bicycle Delay [s]	2.06			2.06			26.58			26.58		
I_b,int, Bicycle LOS Score for Intersection	1.969			2.919			1.581			1.898		
Bicycle LOS	A			C			A			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	32	49	3	30	137	163	104	1	45	18	7	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	9.10	20.00	100.00	33.30	0.00	0.00	0.00	0.00	10.30	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	1	16	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	49	3	30	137	164	120	1	45	18	7	57
Peak Hour Factor	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200	0.7200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	17	1	10	48	57	42	0	16	6	2	20
Total Analysis Volume [veh/h]	44	68	4	42	190	228	167	1	63	25	10	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	35			0			35			0		
v_di, Inbound Pedestrian Volume crossing in	35			0			35			0		
v_co, Outbound Pedestrian Volume crossing	8			68			69			9		
v_ci, Inbound Pedestrian Volume crossing mi	9			69			68			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	43	0	0	43	0	0	17	0	0	17	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	13	13
g / C, Green / Cycle	0.65	0.65	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.11	0.43	0.18	0.07
s, saturation flow rate [veh/h]	1056	1070	1271	1567
c, Capacity [veh/h]	769	761	379	413
d1, Uniform Delay [s]	3.97	6.36	22.27	19.90
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	3.54	7.14	1.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.60	0.61	0.28
d, Delay for Lane Group [s/veh]	4.38	9.90	29.41	21.55
Lane Group LOS	A	A	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.46	3.10	3.67	1.47
50th-Percentile Queue Length [ft/ln]	11.45	77.41	91.65	36.78
95th-Percentile Queue Length [veh/ln]	0.82	5.57	6.60	2.65
95th-Percentile Queue Length [ft/ln]	20.61	139.34	164.96	66.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	4.38	4.38	4.38	9.90	9.90	9.90	29.41	29.41	29.41	21.55	21.55	21.55
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	4.38			9.90			29.41			21.55		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	15.54											
Intersection LOS	B											
Intersection V/C	0.612											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	21.68			21.68			21.68			21.68		
I_p,int, Pedestrian LOS Score for Intersection	1.923			2.310			1.967			1.821		
Crosswalk LOS	A			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1300			1300			433			433		
d_b, Bicycle Delay [s]	3.68			3.68			18.41			18.41		
I_b,int, Bicycle LOS Score for Intersection	1.751			2.319			1.941			1.748		
Bicycle LOS	A			B			A			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	272	356	196	766	348	423	80	10	111	42	24	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	0	0	0	0	0	0	5	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	356	196	766	348	423	80	10	116	42	24	84
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	91	50	195	89	108	20	3	30	11	6	21
Total Analysis Volume [veh/h]	280	363	200	782	355	432	82	10	118	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing in	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing mi	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	22	44	0	48	70	0	9	19	19	9	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	Yes		No	Yes		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	0.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	23	56	33	67	18	10	37	18	9	9
g / C, Green / Cycle	0.19	0.47	0.28	0.56	0.15	0.09	0.31	0.15	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.18	0.39	0.25	0.52	0.09	0.01	0.11	0.04	0.02	0.06
s, saturation flow rate [veh/h]	1572	1429	3105	1517	922	1170	1103	1159	1203	1372
c, Capacity [veh/h]	302	669	867	843	204	101	344	253	93	106
d1, Uniform Delay [s]	47.69	27.99	41.67	24.62	46.84	50.47	31.77	44.41	52.09	54.46
k, delay calibration	0.24	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.08	12.17	3.81	18.54	1.27	0.42	0.59	0.31	1.43	13.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.84	0.90	0.93	0.40	0.10	0.34	0.17	0.26	0.81
d, Delay for Lane Group [s/veh]	69.76	40.16	45.48	43.17	48.12	50.89	32.36	44.73	53.52	67.77
Lane Group LOS	E	D	D	D	D	D	C	D	D	E
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.04	16.05	11.51	23.87	2.32	0.29	2.70	1.15	0.72	2.95
50th-Percentile Queue Length [ft/ln]	251.00	401.17	287.71	596.78	57.93	7.24	67.52	28.65	17.99	73.75
95th-Percentile Queue Length [veh/ln]	15.24	22.62	17.07	31.88	4.17	0.52	4.86	2.06	1.30	5.31
95th-Percentile Queue Length [ft/ln]	380.91	565.41	426.80	797.10	104.27	13.04	121.53	51.58	32.38	132.75

Movement, Approach, & Intersection Results

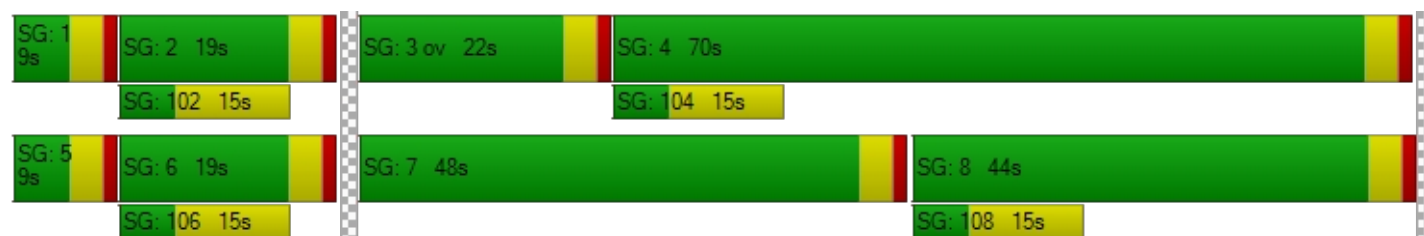
d_M, Delay for Movement [s/veh]	69.76	40.16	40.16	45.48	43.17	43.17	48.12	50.89	32.36	44.73	53.52	67.77
Movement LOS	E	D	D	D	D	D	D	D	C	D	D	E
d_A, Approach Delay [s/veh]	49.99			44.32			39.39			59.06		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	46.48											
Intersection LOS	D											
Intersection V/C	0.826											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	51.34			51.34			51.34			51.34		
I_p,int, Pedestrian LOS Score for Intersection	2.403			2.736			2.377			2.538		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			1100			250			250		
d_b, Bicycle Delay [s]	26.67			12.15			45.94			45.94		
I_b,int, Bicycle LOS Score for Intersection	2.951			4.148			1.906			1.812		
Bicycle LOS	C			D			A			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	186.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.171

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	250	596	277	38	76	72	391	420	226	1160	2508	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	0	0	0	0	19	9	0	5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	253	596	277	38	76	56	391	439	129	1160	2513	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	152	71	10	19	14	100	112	33	296	641	18
Total Analysis Volume [veh/h]	258	608	283	39	78	57	399	448	132	1184	2564	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			2			3			0		
v_di, Inbound Pedestrian Volume crossing in	0			3			2			0		
v_co, Outbound Pedestrian Volume crossing	4			0			3			0		
v_ci, Inbound Pedestrian Volume crossing mi	3			0			4			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	114	114	114	114	114	114	114	114	114	114	114	114
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	20	19	48	9	9	9	16	41	41	25	50	50
g / C, Green / Cycle	0.17	0.17	0.42	0.08	0.08	0.08	0.14	0.36	0.36	0.22	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.16	0.39	0.16	0.03	0.06	0.05	0.12	0.09	0.09	0.36	0.51	0.05
s, saturation flow rate [veh/h]	1654	1565	1764	1273	1228	1077	3386	4922	1458	3328	5020	1615
c, Capacity [veh/h]	285	259	746	100	97	85	478	1774	525	729	2200	708
d1, Uniform Delay [s]	46.30	47.61	22.61	49.94	51.67	51.04	47.69	25.68	25.67	44.55	32.05	18.86
k, delay calibration	0.31	0.50	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.29	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.74	618.14	0.32	2.44	14.14	8.74	3.89	0.07	0.25	284.41	75.73	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	2.35	0.38	0.39	0.80	0.67	0.83	0.25	0.25	1.62	1.17	0.10
d, Delay for Lane Group [s/veh]	70.04	665.75	22.93	52.37	65.81	59.79	51.58	25.76	25.92	328.96	107.78	18.92
Lane Group LOS	E	F	C	D	E	E	D	C	C	F	F	B
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.87	25.82	1.70	1.14	1.30	1.81	5.76	2.87	2.56	39.00	34.87	1.15
50th-Percentile Queue Length [ft/ln]	221.84	645.57	42.49	28.59	32.60	45.35	143.98	71.69	63.97	975.00	871.67	28.78
95th-Percentile Queue Length [veh/ln]	13.76	43.14	3.06	2.06	2.35	3.27	9.69	5.16	4.61	60.63	49.61	2.07
95th-Percentile Queue Length [ft/ln]	343.97	1078.47	76.47	51.46	58.68	81.63	242.37	129.03	115.14	1515.63	1240.25	51.81

Movement, Approach, & Intersection Results

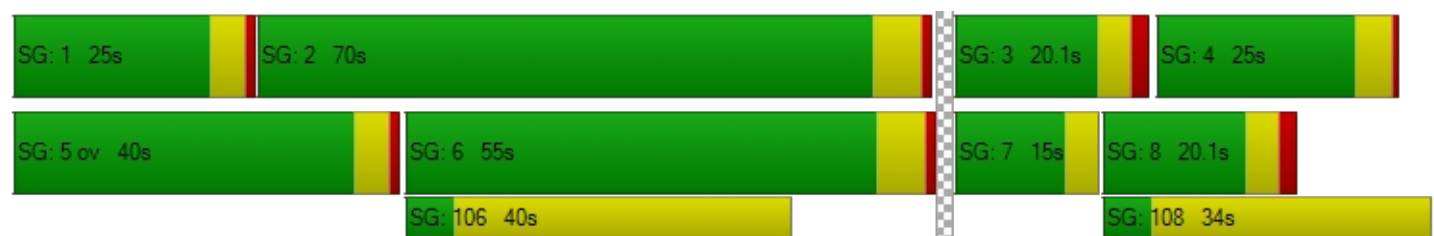
d_M, Delay for Movement [s/veh]	70.04	665.75	22.93	52.37	65.81	59.79	51.58	25.76	25.92	328.96	107.78	18.92
Movement LOS	E	F	C	D	E	E	D	C	C	F	F	B
d_A, Approach Delay [s/veh]	373.66			60.83			36.30			174.62		
Approach LOS	F			E			D			F		
d_I, Intersection Delay [s/veh]	186.62											
Intersection LOS	F											
Intersection V/C	1.171											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	48.36	0.00	48.36	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.140	0.000	3.340	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	361	263	860	1123
d_b, Bicycle Delay [s]	38.27	42.99	18.53	10.97
I_b,int, Bicycle LOS Score for Intersection	2.508	1.716	2.156	3.661
Bicycle LOS	B	A	B	D

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



123 Independence Drive Project

Vistro File: P:\...\123

Scenario 24 Cumulative (2040) plus Project_wIMP PM

Independence_DUDEK_Base3_PM_#1adj.vistro

Report File: P:\...\2040+Proj PM_with Improvements.pdf

11/14/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	1.006	97.7	F
9	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Left	0.961	106.5	F
10	Chrysler Dr/Jefferson Dr - East Driveway	Signalized	HCM 6th Edition	WB Right	0.563	26.0	C
11	Chrysler Dr/Independence Dr	Signalized	HCM 6th Edition	NB Thru	0.415	18.7	B
13	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Thru	1.065	116.4	F
14	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.406	163.1	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report

Intersection 1: Bayfront Expy/Marsh Rd

Control Type:	Signalized	Delay (sec / veh):	97.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.006

Intersection Setup

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Marsh Road			Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	196	40	1729	12	31	5	9	756	232	2653	841	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	1	0	0	0	0	7	0	34	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	40	1730	12	31	5	9	763	232	2687	845	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	10	451	3	8	1	2	199	60	700	220	4
Total Analysis Volume [veh/h]	204	42	1802	13	32	5	9	795	242	2799	880	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			4			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			4		
v_co, Outbound Pedestrian Volume crossing	0			13			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			13			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			13			8			1		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Overlap	Permiss	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3						1,4			
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	82	11	11	0	32	25	32	35	32	35	82	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No	No		Yes	
Maximum Recall		No	No		No			No	No		No	
Pedestrian Recall		No	No		Yes			No	Yes		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	0.00	0.00	0.00
g_i, Effective Green Time [s]	10	92	29	29	31	31	64	80	80
g / C, Green / Cycle	0.06	0.57	0.18	0.18	0.20	0.20	0.40	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.13	0.43	0.02	0.01	0.22	0.22	0.16	0.54	0.53
s, saturation flow rate [veh/h]	1824	4190	1476	1632	1892	1724	1561	5150	1680
c, Capacity [veh/h]	115	2310	302	297	371	338	605	2569	838
d1, Uniform Delay [s]	74.94	28.25	54.30	54.33	64.31	64.31	35.43	40.10	40.10
k, delay calibration	0.50	0.50	0.04	0.04	0.50	0.50	0.31	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	537.38	2.69	0.05	0.04	88.31	90.35	1.21	47.54	51.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	2.13	0.78	0.09	0.08	1.13	1.13	0.40	1.09	1.07
d, Delay for Lane Group [s/veh]	612.32	30.94	54.35	54.37	152.62	154.66	36.64	87.63	91.11
Lane Group LOS	F	C	D	D	F	F	D	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	22.00	18.55	0.90	0.80	24.26	22.29	7.15	44.40	44.24
50th-Percentile Queue Length [ft/ln]	549.93	463.84	22.55	20.07	606.47	557.27	178.83	1109.90	1106.07
95th-Percentile Queue Length [veh/ln]	35.03	25.62	1.62	1.45	34.59	32.10	11.54	59.24	58.19
95th-Percentile Queue Length [ft/ln]	875.68	640.44	40.60	36.13	864.66	802.53	288.49	1480.89	1454.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	612.32	612.32	30.94	54.35	54.36	54.37	152.62	153.60	36.64	87.63	91.11	91.11
Movement LOS	F	F	C	D	D	D	F	F	D	F	F	F
d_A, Approach Delay [s/veh]	100.77			54.36			126.53			88.48		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	97.73											
Intersection LOS	F											
Intersection V/C	1.006											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.680			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			393			954		
d_b, Bicycle Delay [s]	73.73			54.89			51.89			21.90		
I_b,int, Bicycle LOS Score for Intersection	4.939			1.601			2.423			7.655		
Bicycle LOS	E			A			B			F		

Sequence

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Chrysler Dr/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	106.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.961

Intersection Setup

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Chrysler Drive			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	0	472	78	349	50	8	308	159	3	58	15	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	1	0	11	22	36	2	6	2	3	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	490	79	349	61	30	344	161	9	60	18	238
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	123	20	87	15	8	86	40	2	15	5	60
Total Analysis Volume [veh/h]	0	490	79	349	61	30	344	161	9	60	18	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	7			0			0			8		
v_di, Inbound Pedestrian Volume crossing m	8			0			0			7		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	25	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	92	92	92	92	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	22	22	22	28	28
g / C, Green / Cycle	0.33	0.33	0.33	0.33	0.33	0.24	0.24	0.24	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.18	0.18	0.46	0.04	0.10	0.21	0.10	0.01	0.06	0.29
s, saturation flow rate [veh/h]	1710	1467	760	1710	305	1609	1686	1326	985	889
c, Capacity [veh/h]	598	479	199	559	100	383	402	316	300	270
d1, Uniform Delay [s]	25.30	25.39	41.47	21.57	23.07	33.88	29.45	26.82	23.66	31.21
k, delay calibration	0.12	0.12	0.50	0.11	0.11	0.20	0.11	0.11	0.11	0.36
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	1.13	357.84	0.09	1.67	12.68	0.65	0.04	0.32	34.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.55	1.75	0.11	0.30	0.90	0.40	0.03	0.20	0.95
d, Delay for Lane Group [s/veh]	26.02	26.52	399.31	21.66	24.74	46.56	30.10	26.86	23.98	66.19
Lane Group LOS	C	C	F	C	C	D	C	C	C	E
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.41	4.78	24.32	0.92	0.52	8.59	3.02	0.15	0.98	7.97
50th-Percentile Queue Length [ft/ln]	135.21	119.48	608.11	22.96	13.06	214.87	75.49	3.83	24.42	199.33
95th-Percentile Queue Length [veh/ln]	9.22	8.36	41.24	1.65	0.94	13.40	5.44	0.28	1.76	12.60
95th-Percentile Queue Length [ft/ln]	230.56	209.12	1031.05	41.32	23.50	335.07	135.88	6.89	43.96	315.10

Movement, Approach, & Intersection Results

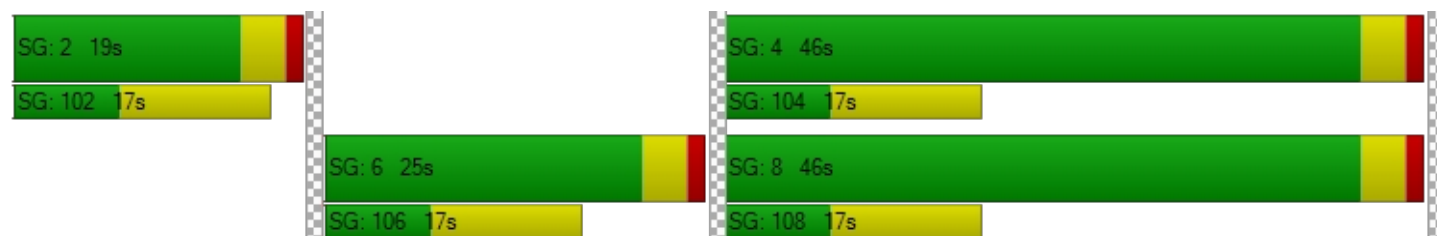
d_M, Delay for Movement [s/veh]	26.02	26.21	26.52	399.31	21.66	24.74	46.56	30.10	26.86	23.98	66.19	66.19
Movement LOS	C	C	C	F	C	C	D	C	C	C	E	E
d_A, Approach Delay [s/veh]	26.25			321.41			41.06			58.17		
Approach LOS	C			F			D			E		
d_I, Intersection Delay [s/veh]	106.50											
Intersection LOS	F											
Intersection V/C	0.961											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	35.60			35.60			35.60			35.60		
I_p,int, Pedestrian LOS Score for Intersection	2.168			2.595			2.269			2.731		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	914			914			457			326		
d_b, Bicycle Delay [s]	13.54			13.54			27.35			32.17		
I_b,int, Bicycle LOS Score for Intersection	2.029			2.286			2.408			2.081		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: Chrysler Dr/Jefferson Dr - East Driveway

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			No			Yes			No		

Volumes

Name	Chrysler Drive			Chrysler Drive			East Driveway			Jefferson Drive		
Base Volume Input [veh/h]	0	239	138	80	31	0	0	0	0	19	0	319
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.80	71.40	22.20	42.90	2.00	2.00	2.00	2.00	0.00	2.00	2.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	11	0	0	5	13	8	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	250	138	80	36	13	8	0	0	19	0	319
Peak Hour Factor	1.0000	0.8500	0.8500	0.8500	0.8500	1.0000	1.0000	1.0000	1.0000	0.8500	1.0000	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	74	41	24	11	3	2	0	0	6	0	94
Total Analysis Volume [veh/h]	0	294	162	94	42	13	8	0	0	22	0	375
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	61	0	0	61	0	0	59	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	6	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	57	57	55	55
g / C, Green / Cycle	0.48	0.48	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.29	0.17	0.01	0.28
s, saturation flow rate [veh/h]	1599	882	598	1431
c, Capacity [veh/h]	790	468	334	687
d1, Uniform Delay [s]	23.14	19.13	18.14	24.29
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.07	1.79	0.13	3.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.32	0.02	0.58
d, Delay for Lane Group [s/veh]	26.20	20.92	18.27	27.80
Lane Group LOS	C	C	B	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.00	2.75	0.14	9.10
50th-Percentile Queue Length [ft/ln]	249.92	68.80	3.43	227.62
95th-Percentile Queue Length [veh/ln]	15.18	4.95	0.25	14.05
95th-Percentile Queue Length [ft/ln]	379.55	123.83	6.18	351.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.20	26.20	26.20	20.92	20.92	20.92	18.27	18.27	18.27	27.80	27.80	27.80
Movement LOS	C	C	C	C	C	C	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	26.20			20.92			18.27			27.80		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	25.99											
Intersection LOS	C											
Intersection V/C	0.563											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			9.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			0.00			51.34			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			0.000			1.740			0.000		
Crosswalk LOS	F			F			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			950			917			917		
d_b, Bicycle Delay [s]	16.54			16.54			17.60			17.60		
I_b,int, Bicycle LOS Score for Intersection	2.312			1.805			1.573			2.215		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: Chrysler Dr/Independence Dr

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.415

Intersection Setup

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chrysler Drive			Chrysler Drive			Independence Drive			Independence Drive		
Base Volume Input [veh/h]	37	133	0	0	18	32	230	5	60	2	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	100.00	0.00	0.00	5.70	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	5	11	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	133	0	0	18	37	241	5	60	2	0	14
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	41	0	0	5	11	73	2	18	1	0	4
Total Analysis Volume [veh/h]	45	162	0	0	22	45	294	6	73	2	0	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	16			0			15			0		
v_di, Inbound Pedestrian Volume crossing in	15			0			16			0		
v_co, Outbound Pedestrian Volume crossing	17			0			1			17		
v_ci, Inbound Pedestrian Volume crossing mi	17			1			0			17		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	33	0	0	33	0	0	67	0	0	67	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	6	0	0	6	0	0	6	0	0	6	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	29	63	63
g / C, Green / Cycle	0.29	0.29	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.13	0.04	0.28	0.01
s, saturation flow rate [veh/h]	1567	1527	1320	1435
c, Capacity [veh/h]	498	479	896	944
d1, Uniform Delay [s]	28.81	26.36	9.28	6.93
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.54	0.61	1.42	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.14	0.42	0.02
d, Delay for Lane Group [s/veh]	31.35	26.97	10.71	6.97
Lane Group LOS	C	C	B	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.34	1.26	4.24	0.16
50th-Percentile Queue Length [ft/ln]	108.50	31.53	105.96	3.92
95th-Percentile Queue Length [veh/ln]	7.76	2.27	7.61	0.28
95th-Percentile Queue Length [ft/ln]	193.91	56.75	190.37	7.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.35	31.35	31.35	26.97	26.97	26.97	10.71	10.71	10.71	6.97	6.97	6.97
Movement LOS	C	C	C	C	C	C	B	B	B	A	A	A
d_A, Approach Delay [s/veh]	31.35			26.97			10.71			6.97		
Approach LOS	C			C			B			A		
d_I, Intersection Delay [s/veh]	18.65											
Intersection LOS	B											
Intersection V/C	0.415											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	41.41			41.41			41.41			41.41		
I_p,int, Pedestrian LOS Score for Intersection	1.873			2.403			1.974			1.732		
Crosswalk LOS	A			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	580			580			1260			1260		
d_b, Bicycle Delay [s]	25.21			25.21			6.85			6.85		
I_b,int, Bicycle LOS Score for Intersection	1.901			1.670			2.175			1.591		
Bicycle LOS	A			A			B			A		

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 13: Chilco St/Constitution Dr

Control Type:	Signalized	Delay (sec / veh):	116.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.065

Intersection Setup

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	1	1	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	90	484	27	131	346	51	325	21	602	270	18	678
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	0	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	484	27	131	346	51	325	21	605	270	18	678
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	138	8	37	98	14	92	6	172	77	5	193
Total Analysis Volume [veh/h]	108	550	31	149	393	58	369	24	688	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing m	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	5	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	12	36	0	9	33	0	23	51	51	24	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	9	9	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	0.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	8	32	5	29	71	53	65	71	50	50
g / C, Green / Cycle	0.07	0.27	0.04	0.24	0.59	0.44	0.54	0.59	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.08	0.35	0.05	0.29	0.42	0.02	0.50	0.35	0.02	0.53
s, saturation flow rate [veh/h]	1353	1674	2868	1575	870	1035	1381	872	1035	1442
c, Capacity [veh/h]	90	445	120	380	596	458	749	596	432	602
d1, Uniform Delay [s]	56.00	44.04	57.50	45.54	13.02	19.10	24.31	12.36	20.78	34.97
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	109.77	152.55	125.49	107.82	4.77	0.22	18.22	3.17	0.20	138.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.20	1.30	1.25	1.19	0.62	0.05	0.92	0.52	0.05	1.28
d, Delay for Lane Group [s/veh]	165.77	196.58	182.99	153.36	17.79	19.31	42.53	15.53	20.99	173.40
Lane Group LOS	F	F	F	F	B	B	D	B	C	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.48	31.96	3.90	22.59	5.95	0.41	20.28	4.60	0.36	40.23
50th-Percentile Queue Length [ft/ln]	137.00	799.10	97.39	564.70	148.69	10.35	507.10	114.94	9.05	1005.84
95th-Percentile Queue Length [veh/ln]	9.81	47.60	7.01	33.37	9.95	0.75	27.67	8.11	0.65	59.36
95th-Percentile Queue Length [ft/ln]	245.31	1190.02	175.30	834.18	248.69	18.63	691.75	202.85	16.30	1484.12

Movement, Approach, & Intersection Results

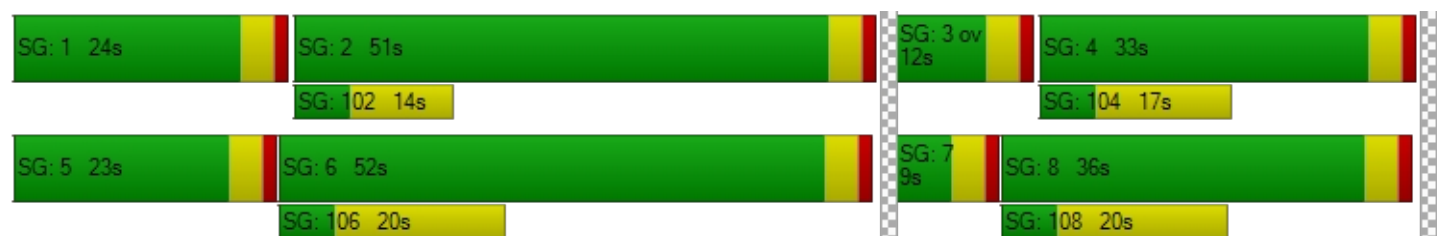
d_M, Delay for Movement [s/veh]	165.77	196.58	196.58	182.99	153.36	153.36	17.79	19.31	42.53	15.53	20.99	173.40
Movement LOS	F	F	F	F	F	F	B	B	D	B	C	F
d_A, Approach Delay [s/veh]	191.75			160.72			33.57			126.44		
Approach LOS	F			F			C			F		
d_I, Intersection Delay [s/veh]	116.40											
Intersection LOS	F											
Intersection V/C	1.065											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	51.34			51.34			51.34			51.34		
I_p,int, Pedestrian LOS Score for Intersection	2.831			2.989			2.455			2.569		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	533			483			783			800		
d_b, Bicycle Delay [s]	32.27			34.50			22.20			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.696			2.550			3.343			3.370		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 14: Bayfront Expy (SR 84)/Willow Rd (SR 114)

Control Type:	Signalized	Delay (sec / veh):	163.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.406

Intersection Setup

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

Volumes

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	195	95	1142	159	332	146	76	2269	402	559	846	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	9	0	0	0	0	0	0	11	5	0	16	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	204	95	1142	159	332	130	76	2280	301	559	862	34
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	24	294	41	86	34	20	588	78	144	222	9
Total Analysis Volume [veh/h]	210	98	1177	164	342	134	78	2351	310	576	889	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			11			11			0		
v_di, Inbound Pedestrian Volume crossing in	0			11			11			0		
v_co, Outbound Pedestrian Volume crossing	8			0			8			0		
v_ci, Inbound Pedestrian Volume crossing mi	8			0			8			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			3			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	108	108	108	108	108	108	108	108	108	108	108	108
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	15	15	43	9	10	10	5	40	40	23	58	58
g / C, Green / Cycle	0.14	0.14	0.40	0.08	0.09	0.09	0.05	0.37	0.37	0.22	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07	0.64	0.09	0.21	0.09	0.03	0.46	0.21	0.17	0.18	0.02
s, saturation flow rate [veh/h]	1749	1479	1852	1748	1606	1451	2484	5073	1462	3336	4959	1615
c, Capacity [veh/h]	245	207	738	146	146	132	119	1887	544	727	2688	875
d1, Uniform Delay [s]	45.30	42.67	32.19	49.37	48.96	48.53	50.42	33.83	26.96	39.83	13.77	11.55
k, delay calibration	0.15	0.11	0.50	0.37	0.46	0.36	0.11	0.11	0.12	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.08	1.68	274.22	101.15	620.94	70.03	5.99	111.55	1.07	2.00	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.47	1.60	1.12	2.34	1.01	0.66	1.25	0.57	0.79	0.33	0.04
d, Delay for Lane Group [s/veh]	56.39	44.35	306.41	150.52	669.90	118.56	56.41	145.38	28.04	41.83	13.84	11.57
Lane Group LOS	E	D	F	F	F	F	E	F	C	D	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	6.10	1.22	24.69	8.08	14.61	6.14	1.13	35.40	6.41	7.34	3.91	0.39
50th-Percentile Queue Length [ft/ln]	152.40	30.55	617.20	201.94	365.20	153.38	28.24	885.05	160.22	183.45	97.78	9.76
95th-Percentile Queue Length [veh/ln]	10.14	2.20	41.40	13.26	25.05	10.25	2.03	51.86	10.56	11.78	7.04	0.70
95th-Percentile Queue Length [ft/ln]	253.62	54.99	1035.07	331.61	626.35	256.18	50.83	1296.49	264.02	294.51	176.00	17.56

Movement, Approach, & Intersection Results

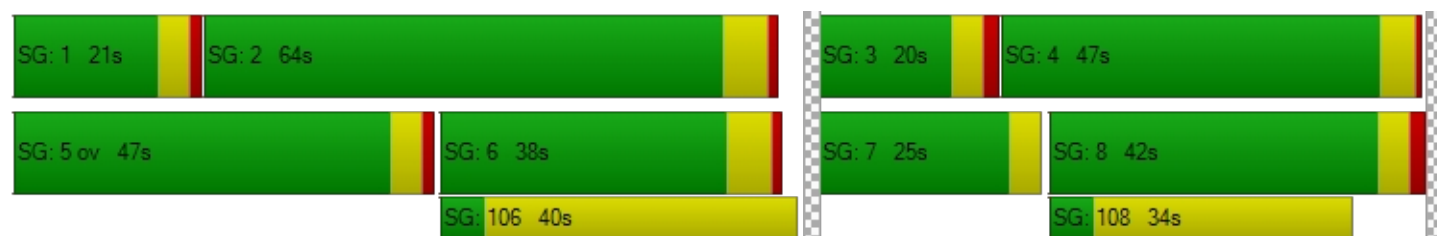
d_M, Delay for Movement [s/veh]	56.39	44.35	306.41	150.52	669.90	118.56	56.41	145.38	28.04	41.83	13.84	11.57
Movement LOS	E	D	F	F	F	F	E	F	C	D	B	B
d_A, Approach Delay [s/veh]	253.76			421.37			129.57			24.53		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	163.13											
Intersection LOS	F											
Intersection V/C	1.406											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.17	0.00	45.17	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.150	0.000	3.341	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	792	686	595	1078
d_b, Bicycle Delay [s]	19.64	23.26	26.55	11.43
I_b,int, Bicycle LOS Score for Intersection	2.785	2.101	3.124	2.385
Bicycle LOS	C	B	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix E

SimTraffic Queueing Worksheets

Intersection: 10: Chrysler Drive & East Driveway/Jefferson Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	39	169	41	194
Average Queue (ft)	10	63	4	75
95th Queue (ft)	34	129	22	146
Link Distance (ft)	214	841	200	414
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Independence Drive & Southwest Dwy

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	5	19	17	29
Average Queue (ft)	0	1	1	5
95th Queue (ft)	4	11	9	22
Link Distance (ft)		334	463	192
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	1			
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 17: Independence Drive & Southeast Dwy

Movement	EB	WB	SB
Directions Served	T	TR	LR
Maximum Queue (ft)	6	22	30
Average Queue (ft)	0	1	9
95th Queue (ft)	6	12	32
Link Distance (ft)	463	309	248
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 18: North Driveway & Constitution Drive

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	814	77	87
Average Queue (ft)	784	7	36
95th Queue (ft)	803	38	69
Link Distance (ft)	761	499	230
Upstream Blk Time (%)	92		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0

Intersection: 10: Chrysler Drive & East Driveway/Jefferson Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	31	154	53	61
Average Queue (ft)	7	74	6	25
95th Queue (ft)	27	122	31	57
Link Distance (ft)	214	841	200	414
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 16: Independence Drive & Southwest Dwy

Movement	EB	EB	SB
Directions Served	L	T	LR
Maximum Queue (ft)	5	18	28
Average Queue (ft)	0	1	4
95th Queue (ft)	6	12	20
Link Distance (ft)		334	192
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	1		
Storage Blk Time (%)		0	
Queuing Penalty (veh)		0	

Intersection: 17: Independence Drive & Southeast Dwy

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	12	19	12	30
Average Queue (ft)	0	1	1	8
95th Queue (ft)	6	9	8	29
Link Distance (ft)		463	309	248
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	1			
Storage Blk Time (%)		0		
Queuing Penalty (veh)		0		

Intersection: 18: North Driveway & Constitution Drive

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (ft)	45	48	62
Average Queue (ft)	5	11	25
95th Queue (ft)	26	38	52
Link Distance (ft)	761	499	230
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Zone Summary

Zone wide Queuing Penalty: 0
