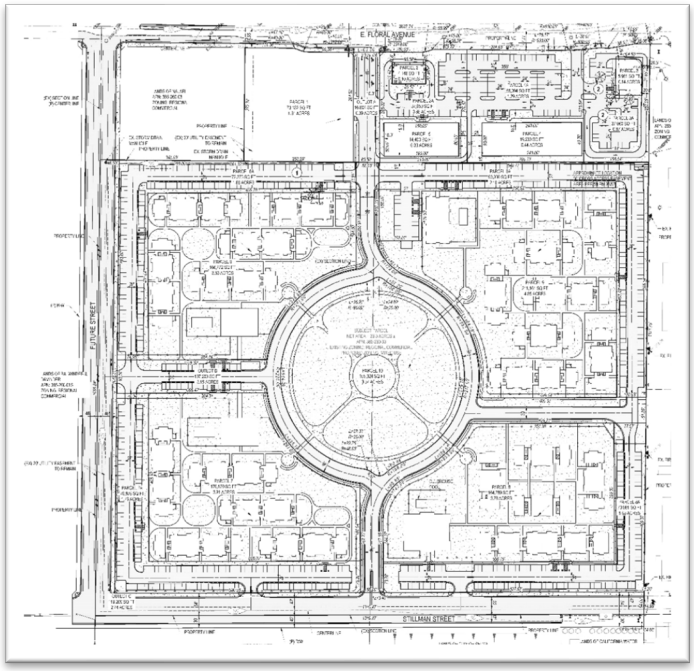


FINAL ENVIRONMENTAL IMPACT REPORT

Selma Casitas

October 2025

PREPARED FOR:

City of Selma
1710 Tucker Street
Selma, CA 93662

PREPARED BY:

Crawford & Bowen Planning, Inc.
113 N. Church Street, Suite 310
Visalia, CA 93291

Draft Environmental Impact Report

Selma Casitas

State Clearinghouse #2024070105

Prepared for:

City of Selma
1710 Tucker Street
Selma, CA 93662

Contact: Jerome Keene, MAS, AICP, Deputy City Manager
Phone: (559) 891-2200 ext. 2267

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October 2025

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CHAPTER ONE - Introduction

Introduction

As defined by Section 15050 of the California Environmental Quality Act (CEQA) Guidelines, the City of Selma (City) is the Lead Agency for the preparation of the Environmental Impact Report (EIR) for the Casitas Selma Project (Project or proposed Project, SCH No 2024070105). The Final EIR presents the environmental information and analyses that have been prepared for the proposed Project, including comments received addressing the adequacy of the Draft EIR, and responses to those comments. In addition to the responses to comments, clarifications, corrections, or minor revisions have been made to the Draft EIR. The Final EIR, which includes the responses to comments, the Draft EIR, and the Mitigation, Monitoring, and Reporting Program, will be used by the Selma City Council in the decision-making process for the proposed Project.

This Final EIR is an informational document intended to disclose to the decision makers of the City, and the public, the environmental consequences of approving and implementing the Project or one of the alternatives to the proposed Project, which are described in the Draft EIR. All written comments received during the public review period (May 23, 2025 through July 7, 2025) of the Draft EIR are addressed in this Final EIR.

The responses in the Final EIR clarify, correct, and/or amplify text in the Draft EIR. Therefore, no significant revisions have been made which would require recirculation of the Draft EIR pursuant to CEQA Guidelines Section 15088.5 (Recirculation of an EIR Prior to Certification). The Final EIR was prepared in accordance with the California Environmental Quality Act (CEQA) (California Public Resources Code Sections 21000-21177).

Summary of Project Description

The proposed Project consists of the annexation of 75.3 acres into the City of Selma. A horizontal mixed-use residential and commercial development project is proposed on the northern 39.1 acres of the annexation area. No development is proposed for the remaining 36.2 acres, which is currently identified as Medium Density Residential within the City's General Plan. A total of 600 apartment units are planned for the Project and approximately 40,000 square feet of retail and food service uses, and a 100-key hotel are anticipated in the commercial area.

A Vesting Tentative Subdivision/Tract Map is also proposed that would create 17 individual lots and 3 outlots for building pads, parking lots, apartment sites, the public park and privately

maintained roads within the development. The proposed subdivision lots range in size from 0.10 acres to 4.85 acres.

Project Development Components

The Project Development consists of 5.64 acres of retail, fast-food, and hospitality development, 11.16 acres of residential development, 5.41 acres of affordable senior housing, 7.01 acres of affordable housing, 3.57 acres of central park, and approximately 6.28 acres of streets, circulation, and outlots. Specifically, the proposed development consists of:

- Retail Development (5.64 acres):
    - Future Retail: 1.61 acres (Parcel 1)
    - Retail Pad: 4,148 sq.ft., 2,400 sq.ft. building (Parcel 2)
    - Retail Pad: 5,951 sq. ft., 3,900 sq. ft. building (Parcel 3)
    - Hotel: 19,200 sq.ft., 3 floors, 100-key (Parcel 4)
    - Retail Pad: 14,400 sq.ft., up to 14,000 sq. ft. building (Parcel 5)
- Parking to support retail development
    - Parcel 2A Parking: 37,659 s.f., 45 stalls are shared by Retail Pad 1
    - Parcel 3A Parking: 37,960 s.f. 38 stalls are shared by Retail Pad 2
    - Parcel 4A Parking: 56,394 s.f., 115 stalls are shared by Hotel
- Multi-Family Housing, market rate (11.16 acres):
    - Phase 1: 3.83 acres, 150 multi-family residential units, 6,000 sq.ft. clubhouse (Parcel 6)
    - Phase 1 parking: 72,273 sq.ft., approximately 190 stalls (Parcel 6A)
    - Phase 2: 3.91 acres, 150 multi-family residential units, 6,000 sq.ft. clubhouse (Parcel 7)
    - Phase 2 parking: 76,876 sq.ft., approximately 181 stalls (Parcel 7A)
- Multi-Family Housing, senior only affordable (5.41 acres):

  - Multi-family residences units: 3.78 acres, 120 units, 11,000 sq.ft. clubhouse (Parcel 8)
  - Parking: 70,981 sq.ft., approximately 165 stalls (Parcel 8A)
- Multi-Family Housing, affordable (7.01 acres):
  - Multi-family residences: 4.85 acres, 180 units, 6,000 sq.ft. clubhouse (Parcel 9)
  - Parking: 93,930 sq.ft., approximately 236 stalls(Parcel 9A)
- Central Parcel: Park: 3.57 acres (Parcel 10)
- Streets/Circulation (6.28 acres):
- Outlot A: 0.39 acres
- Outlot B: 3.15 acres, approximately 38 parking stalls
- Outlot C: 2.74 acres

Site construction will include private internal access roads, lighting and site landscaping. Stillman Street is planned to be widened and improved and Fancher Street will be improved and will connect to Floral Avenue. The arterial streets and collector streets will be dedicated to the City of Selma, and the City will be responsible for maintenance of these streets. Local private streets will be owned and maintained by the Development Association.

The retail and hotel developments will operate seven days per week with hours of operation ranging from 12-24 hours.

Utilities and Infrastructure

Water service is provided by the Selma District of California Water Service (CalWater). The proposed Project would connect to the existing 12" main on Floral and Highland Avenue. Additionally, Station 20 is south of the Project area which has a well, two boosters, and a one-million-gallon tank that is beneficial during high peak water usage times. As part of the Project, the existing water main in Stillman Avenue will be continued west along the Project's extent and loop into the existing Floral Avenue water main.

Wastewater sewage services for the proposed Project would be provided by the Selma-Kingsburg-Fowler County Sanitation District (SKF CSD) by connecting to the existing service infrastructure along Floral Avenue and through extensions of infrastructure off-site.

The City would provide stormwater management services to the Project site. Project construction includes curb and gutter along all internal roadways. Stormwater would be collected through surface and subsurface drainage infrastructure on site towards proposed and existing stormwater collection and drainage infrastructure along Floral Avenue.

Solid waste collection for the Project would be managed by the City of Selma through their contracted solid waste services contractor, which at the time of this report is Waste Management.

Electricity and natural gas services for the Project would be supplied by Pacific Gas and Electric through connections to existing service lines.

Off-Site Improvements

As part of the Project and as described above, the proposed Project will tie-in to existing sewer, storm drain and water infrastructure. To accomplish this, approximately 11,089 linear feet (LF) of pipeline will be installed as described below.

Sewer

- Replacement of approximately 2,280 LF of existing 18″ sanitary sewer main in E. Rose Avenue from the existing pump station to S. Highland Avenue. Depths are anticipated to be around 20 feet.
- Installation of approximately 1,960 LF of new 18″ sanitary sewer in E. Rose Avenue between S. Highland Avenue to the future S. Fancher Street alignment. Depths are anticipated to be around 18′.
- Installation of approximately 2,730 LF of new 18″ sanitary sewer in the future S. Fancher Street alignment between E. Rose Avenue and E. Floral Avenue. Depths are anticipated to be around 16′ to 18′.
- Installation of approximately 500 LF of new 8″ sanitary sewer in the Stillman Street alignment connecting to the existing stub at the West end of Stillman Street. Depths are anticipated to be approximately 10′ to 12′.
- Installation of approximately 300 LF of new 8″ sanitary sewer in the Stillman Street alignment connecting to the 18″ sanitary sewer in the future S. Fancher Street alignment. Depths are anticipated to be approximately 10′ to 12′.
- Installation of approximately 57 LF of new 8″ sanitary sewer in E. Floral Avenue, connecting to the existing sanitary sewer. Depths are anticipated to be approximately 10′.

Storm Drain

- Install approximately 83 LF of potentially 24″ storm drain pipe connecting to the existing storm drain pipeline in Stillman Street alignment. Depth is anticipated to be approximately 10′.
- Install approximately 130 LF of potentially 36″ storm drain pipe connecting to the existing storm drain pipeline in Stillman Street alignment. Depth is anticipated to be approximately 10′.
- Install approximately 40 LF of potentially 24″ storm drain pipe connecting to the existing storm drain pipeline in future S. Fancher Street alignment. Depth is anticipated to be approximately 10′.
- Install approximately 78 LF of potentially 24″ storm drain pipe connecting to the existing storm drain pipeline in E. Floral Avenue. Depth is anticipated to be approximately 10′.
- Install approximately 12 LF of potentially 18″ storm drain pipe connecting to the existing storm drain pipeline in E. Floral Avenue. Depth is anticipated to be approximately 10′.
- Install approximately 68 LF of potentially 18″ storm drain pipe connecting to the existing storm drain pipeline in E. Floral Avenue. Depth is anticipated to be approximately 10′.

Water

- Install approximately 1,120 LF of potentially 12″ water connecting to the existing water main at the West end of Stillman Street to S. Fancher Street. Depth is anticipated to be approximately 5′.
- Install approximately 72 LF of potentially 8″ water connecting to the water main in the future Stillman Street extension. Depth is anticipated to be approximately 5′.
- Install approximately 1,450 LF of potentially 12″ water in the future S. Fancher Street alignment, connecting to the existing approximate 14″ water main in E. Floral Avenue. Depth is anticipated to be approximately 5′.

- Install approximately 48 LF of potentially 8″ water connecting to the water main in the future Stillman Street extension. Depth is anticipated to be approximately 5′.

- Install approximately 83 LF of potentially 12″ water connecting to the existing approximate 14″ water main in E. Floral Avenue. Depth is anticipated to be approximately 5′.

- Install approximately 78 LF of potentially 12″ water connecting to the existing approximate 14″ water main in E. Floral Avenue. Depth is anticipated to be approximately 5′.

Construction Schedule

Proposed Project construction is slated to start in spring of 2025 and is anticipated to last approximately three years.

Project Location

The Project site is located west of Highland Avenue, north of Rose Avenue and south of E. Floral Avenue. The site consists of APNs 385-260-33, 385-230-16, -38 and -39. The site is approximately 75.3 acres and currently consists of active and fallowed agricultural land. The proposed development site will occur on APN 385-230-33 and is approximately 39.1 acres. No development is proposed for the remaining 36.2 acres to be annexed. The site is predominantly surrounded by agricultural land, rural residential homes and commercial developments.

Project Objectives

In accordance with CEQA Guidelines Section 15124(b), the following are the City of Selma's Project objectives:

- To provide a mixed-use development at pricing appropriate for the market, in a growing area of the City of Selma that satisfies the City of Selma's policies, regulations and expectations as defined in the City's General Plan, Zoning Ordinance, and other applicable plans, documents, and programs adopted by the City.
- To provide a variety of housing opportunities with a range of densities, styles, sizes and values that will be designed to satisfy existing and future demand for quality housing in the area.
- To provide a residential development that assists the City in meeting its General Plan and Housing Element requirements and objectives.

- To provide an economically feasible and conveniently-located commercial development to serve residents in the western portion of Selma.
- To provide a sense of community and walkability within the development through the use of street patterns, parks/open space areas, landscaping and other project amenities.

CEQA Evaluation Background

Notice of Preparation

The City of Selma circulated a Notice of Preparation (NOP) of an EIR for the proposed Project from July 3, 2024 to August 2, 2024 to trustee and responsible agencies, the State Clearinghouse (SCH #2024070105), and the public.

During the NOP public comment period, the City received comments from three public agencies; those comments are presented in Appendix A and summarized here as follows:

- **Native American Heritage Commission** (July 19, 2024): Recommended consultation with California Native American tribes pursuant to AB 52 and SB 18. Refer to Sections 3.5 – Cultural Resources and 3.18 – Tribal Resources of the for more information.
- **CA Department of Fish & Wildlife** (July 29, 2024): Identified potential species in the project area and provided recommendations on handling of such species. Refer to the Biological Resources section of the Initial Study for more information.
- **CA Department of Toxic Substances Control** (July 10, 2024): Provided recommendations and requests regarding imported soil, previously used pesticides and other contaminants of concern.

Draft EIR

The Draft EIR was properly noticed and circulated for public review and comment for 45 days, from May 23, 2025 through July 7, 2025. The Notice of Availability was published in the *Selma Enterprise / Kingsburg Recorder* newspaper. The Draft EIR and Appendices were sent to the State Clearinghouse for distribution and notices were mailed to adjacent landowners, local agencies and other interested individuals. The City received six comment letters on the Draft EIR. These letters and emails are reproduced in their entirety in Chapter Two of this Final EIR and responses are shown after each letter.

These comments and responses that make up the Final EIR, in combination with the Draft EIR and Appendices, constitute the EIR that will be considered for certification by the decision makers of the City of Selma.

CEQA Requirements

Under CEQA, the Lead Agency must prepare and certify a Final EIR prior to a proposed project being approved. The contents of a Final EIR are specified in Section 15132 of the CEQA Guidelines, which states that a Final EIR must consist of the following:

1. The Draft EIR or a revision of the Draft EIR.
2. Comments and recommendations received on the Draft EIR either verbatim or in summary.
3. A list of persons, organizations, and public agencies commenting on the Draft EIR.
4. The responses of the Lead Agency to significant environmental points raised in the review and consultation process.
5. Any other information added by the Lead Agency.

The Lead Agency must provide each public agency that commented on the Draft EIR with a copy of the Lead Agency's response to such comments a minimum of 10 days before certifying the Final EIR.

Use of the Final EIR

The Final EIR allows the public and the City an opportunity to review revisions to the Draft EIR and the responses to comments received during the Draft EIR's public review period. The Final EIR serves as the environmental document to inform the City of the environmental consequences of the proposed Project, either in whole or in part, or one of the alternatives to the Project discussed in the Draft EIR.

As required by Section 15090(a)(1)-(3) of the CEQA Guidelines, a Lead Agency, in certifying a Final EIR, must make the following three determinations:

1. The Final EIR has been completed in compliance with CEQA.
2. The Final EIR was presented to the decision-making body of the Lead Agency, and the decision-making body reviewed and considered the information in the Final EIR prior to approving the project.
3. The Final EIR reflects the Lead Agency's independent judgement and analysis.

As required by Section 15091 of the CEQA Guidelines, a public agency cannot approve or carry out a project for which an EIR has been certified that identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings (Findings of Fact) for each of those significant effects, accompanied by a brief explanation of the rationale to reach findings supported by substantial evidence in the record. The possible findings are as follows:

1. Changes or alterations have been required in or incorporated into the project that avoid or substantially lessen the significant environmental effect as identified in the Final EIR.
2. Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
3. Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final EIR.

Additionally, pursuant to Section 15093(b) of the CEQA Guidelines, when a Lead Agency approves a project that would result in significant unavoidable impacts that are disclosed in the Final EIR, the agency must state in writing the reasons supporting the approval. The Statement of Overriding Considerations must be supported by substantial evidence in the Lead Agency's administrative record. The Findings of Fact (Section 15091) and Statement of Overriding Considerations (Section 15093(b)) have been provided to the City for consideration.

If the City approves the proposed Project, and as part of that action adopts mitigation measures, the City will also adopt a Mitigation Monitoring and Reporting Program (see Public Resources Code Section 21081.6).

CHAPTER TWO – Comments and Responses

Introduction

This chapter of the Final EIR contains a copy of each of the written comments received from the public and other agencies with jurisdiction over the proposed Project, followed by responses to each comment. Each letter is numbered (e.g. Letter 1, Letter 2, etc.).

A total of six comment letters were received from the following agencies:

Comment Letter 1 Monique Wilber Conservation Program Support Supervisor Division of Land Resource Protection California Department of Conservation 715 P Street, MS 1904 Sacramento, CA 95814 **Jume 27, 2025**
Comment Letter 2 Brian Spaunhurst Executive Officer Fresno Local Agency Formation Commission 1401 Fulton Street, Suite 800 Fresno, CA 93721 **July 7, 2025**
Comment Letter 3 Julie A. Vance Regional Manager Department of Fish and Wildlife, Central Region California Natural Resources Agency 1234 East Shaw Avenue Fresno, CA 93710 **July 7, 2025**

Comment Letter 4 Mark Montelongo Director of Policy and Government Affairs San Joaquin Valley Air Pollution Control District Central Region (Main Office) 1990 E. Gettysburg Avenue Fresno, CA 93726-0244 **June 30, 2025**
Comment Letter 5 Dave Padilla Branch Chief Local Development Review, District 6 Office California Department of Transportation 1352 West Olive Avenue Fresno, CA 93788-2616 **June 12, 2025**
Comment Letter 6 Dwight Nelson/Roseana Gomez Selma Auto Mall 2755 Auto Mall Drive Selma, CA 93662 **July 7, 2025**

Comment Letter 1 – California Department of Conservation

California
Department of Conservation
Division of Land Resource Protection

Gavin Newsom, Governor
Jennifer Lucchesi, Director

JUNE 27, 2025

VIA EMAIL: KAMARAB@CITYOFSELMA.COM
KAMARA BIAWOGI, CITY PLANNER
CITY OF SELMA
1710 TUCKER STREET
SELMA, CA 93662

Dear Kamara Biawogi:

ENVIRONMENTAL IMPACT REPORT FOR THE SELMA CASITAS PROJECT, SCH# 2024070105

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Environmental Impact Report for the Selma Casitas Project (Project).

The Division monitors and maps farmland conversion on a statewide basis, provides technical assistance regarding the Williamson Act, and administers various agricultural land conservation programs. Public Resources Code, section 614, subdivision (b) authorizes the Department to provide soil conservation advisory services to local governments, including review of CEQA documents.

Protection of the state's agricultural land resources is part of the Department's mission and central to many of its programs. The CEQA process gives the Department an opportunity to acknowledge the value of the resource, identify areas of Department interest, and offer information on how to assess potential impacts or mitigation opportunities.

The Department respects local decision-making by informing the CEQA process and is not taking a position or providing legal or policy interpretation.

We offer the following comments for consideration with respect to the project's potential impacts on agricultural land and resources within the Department's purview.

PROJECT ATTRIBUTES

The proposed Project consists of the annexation of 75.3 acres into the City of Selma. A horizontal mixed-use residential and commercial development project is proposed on the northern 39.1 acres of the annexation area. A total of 600 apartment units are planned for the Project and approximately 40,000 square feet of retail and food service uses, and a 100-key hotel are anticipated in the commercial area.

A Vesting Tentative Subdivision/Tract Map is also proposed that would create 17 individual lots and 3 out lots for building pads, parking lots, apartment sites, the public

State of California Natural Resources Agency | Department of Conservation
715 P Street, MS 1904, Sacramento, CA 95814
conservation.ca.gov | T: (916) 324-0850

Letter 1, page 2

park and privately maintained roads within the development. The Project site contains Prime Farmland as designated by DOC's Farmland Mapping and Monitoring Program.

PROJECT CONSIDERATIONS

The conversion of agricultural land represents a permanent reduction and impact to California's agricultural land resources. The Department generally advises discussion of the following in any environmental review for the loss or conversion of agricultural land:

- Type, amount, and location of farmland conversion resulting directly and indirectly from implementation of the proposed project.
- Impacts on any current and future agricultural operations in the vicinity; e.g., land-use conflicts, increases in land values and taxes, loss of agricultural support infrastructure such as processing facilities, etc.
- Incremental impacts leading to cumulative impacts on agricultural land. This would include impacts from the proposed project, as well as impacts from past, current, and likely future projects.
- Implementation of any City or County Agricultural Mitigation Plans, Programs, or Policies.
- Proposed mitigation measures for impacted agricultural lands within the proposed project area.

MITIGATING AGRICULTURAL LAND LOSS OR CONVERSION

Consistent with CEQA Guidelines, the Department advises that the environmental review address mitigation for the loss or conversion of agricultural land. An agricultural conservation easement is one potential method for mitigating loss or conversion of agricultural land. (*See* Cal. Code Regs., tit. 14, § 15370 [mitigation includes "compensating for the impact by replacing or providing substitute resources or environments, including through permanent protection of such resources in the form of conservation easements."]; *see also King and Gardiner Farms, LLC v. County of Kern* (2020) 45 Cal.App.5th 814.)

Mitigation through agricultural conservation easements can take at least two forms: the outright purchase of easements or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural easements. The conversion of agricultural land may be viewed as an impact of at least regional significance. Hence, the search for replacement lands may not need to be limited strictly to lands within the project's surrounding area. A helpful source for regional and statewide agricultural mitigation banks is the California Council of Land Trusts. They provide helpful insight into farmland mitigation policies and implementation strategies, including a guidebook with model policies and a model local ordinance. The guidebook can be found at:

California Council of Land Trusts

Page 2 of 3

Of course, the use of conservation easements is only one form of mitigation, and the Department urges consideration of any other feasible measures necessary to mitigate project impacts.

Thank you for giving us the opportunity to comment on the Environmental Impact Report for the Selma Casitas Project. Please provide the Department with notices of any future hearing dates as well as any staff reports pertaining to this project. If you have any questions regarding our comments, please contact Farl Grundy, Associate Environmental Planner via email at Farl.Grundy@conservation.ca.gov.

Sincerely,

Monique Wilber

Monique Wilber

Conservation Program Support Supervisor

Page 3 of 3

Response to Comment Letter 1:

Comment 1: The Department of Conservation (DOC) has provided mitigation suggestions for the proposed Project to mitigate impacts resulting from loss or conversion of agricultural lands.

> **Response to Comment 1:** As described on page 25 of the Initial Study/Notice of Preparation provided in Appendix A of the Draft Environmental Impact Report (DEIR), the proposed Project site is designated Regional Commercial by the City of Selma 2035 General Plan, and as such, impacts resulting from the conversion of agricultural land has

been analyzed in the General Plan Environmental Impact Report (SCH#2008081082). Agricultural conversion impacts were determined to be a significant and unavoidable impact and a Statement of Overriding Considerations was adopted by the City. As such, no new agricultural conversion impacts would occur due to Project implementation and mitigation is not warranted.

Comment Letter 2 – Fresno Local Agency Formation Commission

Letter 2, page 1

Fresno Local Agency Formation Commission

July 7, 2025

Kamara Biawogi
City Planner
City of Selma
1710 Tucker Street
Selma, CA 93662

Dear Kamara Biawogi:

Subject: Comments on Draft Environmental Impact Report for the Proposed Selma Casita Project

Thank you for the opportunity to review and comment on the above draft EIR. While LAFCo's role as a Responsible Agency for future annexation of the subject property to the City is noted in the EIR, there is no discussion of what impacts may result from the Commission's action. Approval of such annexations rarely creates adverse impacts, but it would be useful to point out that annexation to the City is necessary to enable the provision of City services to the site, thereby avoiding impacts that would otherwise occur.

Should the need arise, Fresno LAFCo is available to attend any community outreach meetings to help facilitate engagement.

Sincerely,

Brian Spaunhurst,
Executive Officer

BS:jm
https://fresnocounty.sharepoint.com/sites/LAFCo/SharedFiles/JMatias/Project%20Comments/Casitas%20project%20EIR%20comments.docx

1401 Fulton Street, Suite 800, Fresno, CA 93721
(559) 600-0604

Response to Comment Letter 2:

Comment 1: The Local Agency Formation Commission states that it would be useful to point out that annexation to the City is necessary to enable the provision of City services to the site.

> **Response to Comment 1:** Page 2-6 of the DEIR describes the Project Description in detail, and describes the requirements and approvals needed for Project implementation. The DEIR states that annexation of the site into the City of Selma is required, however, the text has been amended to include that the annexation is necessary for services to be provided to the site. See Chapter Three of this Final EIR for the text amendment.

Comment Letter 3 – California Department of Fish and Wildlife

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

July 7, 2025

Kamara Biawogi, City Planner
City of Selma
1710 Tucker Street
Selma, California 93662
(559) 891-2200
kamarab@cityofselma.com

Subject: Selma Casitas Project (Project)
Draft Environmental Impact Report (DEIR)
State Clearinghouse No.: 2024070105

Dear Kamara Biawogi:

The California Department of Fish and Wildlife (CDFW) received a DEIR from the City of Selma, as Lead Agency, for the above-referenced Project pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (Id., § 1802.). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

Conserving California's Wildlife Since 1870

Letter 3, page 2

Docusign Envelope ID: DCAF1D85-7AD9-40AB-8DD9-B00A13434A7D

agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, reasonably foreseeable future projects may be subject to CDFW's lake and streambed alteration regulatory authority (Fish & G. Code, § 1600 et seq.). Likewise, to the extent implementation of reasonably foreseeable future projects may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

Nesting Birds: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include, sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

PROJECT DESCRIPTION SUMMARY

Proponent: River Park Properties II

Objective: The proposed Project consists of the annexation of 75.31 acres into the City of Selma. A mixed-use residential and commercial development is proposed on the northern 39.10 acres of the annexation area. No development is proposed for the remaining 36.21 acres. A total of 600 apartment units are planned for the Project and approximately 40,000 square feet of retail and food service uses, and a 100-key hotel are anticipated in the commercial area. A Vesting Tentative Subdivision/Tract Map is also proposed that would create 17 individual lots and three outlots for building pads, parking lots, apartment sites, a public park, and privately maintained roads within the Project. The proposed subdivision lots range in size from 0.10 acres to 4.85 acres. Site construction will include private internal access roads, lighting and site landscaping. Stillman Street, which runs along the southside of the proposed development area, is planned to be widened and improved and Fancher Street, which runs along the west side of the proposed development area, will be improved and will connect to Floral Avenue, which runs on the north side of the proposed development area. Utilities and infrastructure improvements will include connecting water, storm drain, and wastewater services.

Location: The proposed Project is located adjacent to the western City of Selma limits in Fresno County. The Project site is located west of Highland Avenue, north of Rose Avenue, and south of East Floral Avenue. The site consists of Assessor Parcel

Letter 3, page 3

Docusign Envelope ID: DCAF1D85-7AD9-40AB-8DD9-B00A13434A7D

Numbers (APNs) 385-260-33, 385-230-16, -38 and -39. The proposed development site will occur on APN 385-230-33. No development is proposed for the remaining 36.21 acres to be annexed. The site is predominantly surrounded by agricultural land, rural residential homes and commercial developments.

Timeframe: Slated to start in spring 2025 and anticipated to last approximately three (3) years.

COMMENTS AND RECOMMENDATIONS

CDFW offers the following comments and recommendations to assist the City of Selma in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the CEQA document prepared for this Project.

Aerial imagery shows the Project site contains regularly disked and fallowed agricultural lands and is comprised of annual grassland and ruderal species. The Project site is bordered by agricultural orchards to the south and west and commercial development to the east and north. CDFW previously commented on the Notice of Preparation (NOP) and Initial Study for the Project in a letter dated July 29, 2024, and provided survey recommendations for the State threatened Swainson's hawk (*Buteo swainsoni*) and the State candidate Crotch's bumble bee (*Bombus crotchii*).

Fresno County notes that this DEIR is a Focused DEIR does not include an evaluation of Project related impacts to biological resources. Instead, the Initial Study and NOP, which CDFW commented on with the July 29, 2024, comment letter, are referenced in the DEIR to address potential impacts to biological resources. While the DEIR does not include an analysis for biological resources, Mitigation Measure BIO-1 is included in the Mitigation Monitoring and Reporting Program portion of the document. Mitigation Measure BIO-1 mitigates for potential impacts to nesting birds and acknowledges that three (3) trees will be removed to accommodate the Project. Based on the lack of analysis for biological resources within the DEIR and inadequacy of Mitigation Measure BIO-1 to mitigate for potential significant impacts to Swainson's hawk, the State candidate western burrowing owl (*Athene cunicularia hypugaea*), and Crotch's bumble bee, CDFW recommends the following measures be incorporated within the DEIR and implemented prior to initiation of construction activities associated with the Project.

Comment 1: Swainson's Hawk

Swainson's Hawk (SWHA) have been documented to occur near the Project site (CDFW 2025). SWHA are known to travel up to 18 miles to forage and are also attracted to ground disturbing activities such as disking because these activities make prey vulnerable by reducing cover (Estep 1989). The habitat types present at and

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surrounding the Project site all provide suitable foraging habitat for SWHA and any power poles or trees in the Project vicinity may be utilized for perching and/or nesting. SWHA exhibit high nest-site fidelity year after year and lack of suitable nesting habitat limits their local distribution and abundance (CDFW 2016). In addition, conversion of undeveloped land can directly influence distribution and abundance of SWHA, due to the reduction in foraging habitat.

Mitigation Measure BIO-1 provides general practices to lessen the potential impact of this Project on nesting birds. Scheduling construction, to the extent possible, to avoid the nesting season and conducting preconstruction surveys no more than 14 days prior to the initiation of construction activities are two Project management practices mentioned. CDFW concurs with conducting nesting birds surveys prior to construction, however, CDFW does not concur that Mitigation Measure BIO-1 is adequate to mitigate for potentially significant impacts to SWHA and recommends the following be included as mitigation measures within the DEIR:

Recommended Mitigation Measure 1: SWHA Surveys Prior to Construction CDFW recommends that a qualified biologist conduct surveys for nesting SWHA following the survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) immediately prior to construction.

Recommended Mitigation Measure 2: SWHA Avoidance Buffer

If Project-specific ground disturbance activities will take place during the SWHA nesting season (i.e., March 1 through September 15), and active SWHA nests are present, CDFW recommends a minimum ½-mile no-disturbance buffer be delineated and maintained around each nest, regardless of whether it was detected by surveys or observed incidentally. These buffers would remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival, to prevent nest abandonment and other take of SWHA as a result of Project activities.

Recommended Mitigation Measure 3: SWHA Take Authorization

CDFW also recommends that in the event an active SWHA nest is detected, and a ½-mile no-disturbance buffer is not feasible, consultation with CDFW is warranted to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

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Recommended Mitigation Measure 4: SWHA Foraging Habitat Mitigation

Finally, CDFW recommends compensation for the loss of SWHA foraging habitat as described in CDFW's "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks" (CDFG 1994) to reduce impacts to foraging habitat to less than significant. The Staff Report recommends that mitigation for habitat loss occur within a minimum distance of 10 miles from known nest sites. CDFW has the following recommendations based on the Staff Report:

- For projects within 1 mile of an active nest tree, a minimum of 1 acre of habitat management (HM) land for each acre of development is advised.
- For projects within 5 miles of an active nest but greater than 1 mile, a minimum of ¾ acre of HM land for each acre of development is advised.
- For projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree, a minimum of ½ acre of HM land for each acre of development is advised

Comment 2: Western Burrowing Owl

The Project site is within the known geographic range of western burrowing owl (BUOW), and, based on aerial imagery, it appears that suitable BUOW habitat may be present with the Project site. The California Fish and Game Commission (FGC) approved BUOW as a candidate for potential listing as a protected species under CESA on October 10, 2024, and published these findings in the California Regulatory Notice Register (Notice Register) on October 25, 2024. As such, BUOW is now considered a candidate under CESA and receives the same legal protection afforded to an endangered or threatened species (Fish & G. Code, §§ 2074.2 & 2085).

As BUOW have the potential to be present within the Project site or Project vicinity, and the DEIR does not include any sort of assessment for the species, CDFW recommends the DEIR include the following:

Recommended Mitigation Measure 5: BUOW Preconstruction Surveys

CDFW recommends that focused surveys, following the 2012 Staff Report on Burrowing Owl Mitigation (2012 Staff Report) (CDFG 2012), be conducted the survey season immediately prior to construction. Please note that the 2012 Staff Report necessitates multiple surveys prior to the initiation of construction.

Recommended Mitigation Measure 6: BUOW Avoidance Buffer

Should a BUOW or known BUOW den (active or inactive) be detected, either during preconstruction surveys or construction activities, CDFW recommends that no-disturbance buffers, as outlined in the 2012 Staff Report on Burrowing

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Owl Mitigation (CDFG 2012), be implemented prior to and during any ground-disturbing activities. CDFW also recommends that these buffers be implemented for both wintering and breeding BUOW.

Recommended Mitigation Measure 7: BUOW Take Authorization

If a BUOW or known BUOW den (active or inactive) is detected, and the no-disturbance buffers outlined in the 2012 Staff Report on Burrowing Mitigation are not feasible, consultation with CDFW is warranted to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) is necessary to comply with CESA.

Comment 3: Crotch's Bumble Bee

The Project site is within the range of Crotch's bumble bee (CBB). CBB are known to inhabit areas of grasslands and scrub that contain requisite habitat elements for nesting, such as small mammal burrows and bunch/thatched grasses, and these habitat elements may be present within the Project site. The NOP letter submitted on July 29, 2024, recommended that a qualified biologist conduct a habitat assessment to determine if the Project area and the immediate surrounding vicinity contain suitable CBB habitat; however, the DEIR does not include an assessment for the species. As CBB have the potential to occupy the Project site, CDFW recommends the following be included as mitigation measures within the DEIR:

Recommended Mitigation Measure 8: CBB Habitat Assessment

CDFW recommends a qualified biologist conduct a habitat assessment to determine if the Project site and the immediate surrounding vicinity contain habitat suitable to support CBB. Potential nesting sites, which include all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs would need to be documented as part of the assessment.

Recommended Mitigation Measure 9: CBB Surveys Prior to Construction

If potentially suitable habitat is identified, CDFW recommends that a qualified biologist conduct focused surveys for CBB, and their requisite habitat features following the methodology outlined in the Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023).

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Recommended Mitigation Measure 10: CBB Avoidance

If CBB is detected, then CDFW recommends that all small mammal burrows and thatched/bunch grasses be avoided by a minimum of 50 feet to avoid take and potentially significant impacts. If ground-disturbing activities will occur during the overwintering period (October through February), consultation with CDFW is warranted to discuss how to implement Project activities and avoid take. Any detection of CBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take.

Recommended Mitigation Measure 11: CBB Take Authorization

If take cannot be avoided, CDFW recommends acquiring an ITP pursuant to Fish and Game Code Section 2081(b), prior to initiating ground-disturbing activities.

Editorial Comments and/or Suggestions

Nesting birds: CDFW encourages that Project ground-disturbing activities occur during the bird non-nesting season; however, if ground-disturbing or vegetation-disturbing activities must occur during the nesting season (February 1st through September 15th), the Project applicant is responsible for ensuring that implementation of the Project does not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Code sections as referenced above.

CDFW further recommends that a qualified biologist conduct a pre-construction survey for active nests no more than 10 days prior to the start of ground or vegetation disturbance to maximize the probability that nests that could potentially be impacted are detected. CDFW also recommends that surveys cover a sufficient area around the Project site to identify nests and determine their status. A sufficient area means any area potentially affected, either directly or indirectly, by the Project. In addition to direct impacts (i.e., nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. CDFW recommends that a qualified biologist establish a behavioral baseline of all identified nests. Once Project activities begin, CDFW recommends having a qualified biologist continuously monitor nests to detect behavioral changes resulting from the Project. If behavioral changes occur, CDFW recommends halting the work causing that change and consulting with CDFW for additional avoidance and minimization measures.

If continuous monitoring of identified nests by a qualified biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined the birds have fledged and are

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no longer reliant upon the nest or on-site parental care for survival. Variance from these no-disturbance buffers is possible when there is a compelling biological or ecological reason to do so, such as when the Project site would be concealed from a nest site by topography. CDFW recommends that a qualified biologist advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

CNDDB: Please note that the CNDDB is populated by records through voluntary submissions of species detections. As a result, species may be present in locations not depicted in the CNDDB but where there is suitable habitat and features capable of supporting species. A lack of an occurrence record in the CNDDB does not mean a species is not present. In order to adequately assess any potential Project related impacts to biological resources, surveys conducted by a qualified biologist during the appropriate survey period(s) and using the appropriate protocol survey methodology are warranted in order to determine whether or not any special-status species are present at or near the Project site.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the CNDDB. The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to the CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to the CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

The Project, as proposed, could have an impact on biological resources, and an assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089).

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CONCLUSION

CDFW appreciates the opportunity to comment on the DEIR to assist the City of Selma in identifying and mitigating Project impacts on biological resources. A Mitigation Monitoring and Reporting Program (Attachment 1) is included below to assist the City of Selma with incorporating the recommended mitigation measures provided above.

More information on survey and monitoring protocols for sensitive species can be found at CDFW's website (https://www.wildlife.ca.gov/Conservation/Survey-Protocols). If you have any questions regarding this letter or further coordination, please contact Marile Colindres, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 974-3452, or by electronic mail at marile.colindres@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Krista Tomlinson
12950B95267A4F5...

For Julie A. Vance
Regional Manager

ATTACHMENT

ec: State Clearinghouse
Governor's Office of Planning and Research
State.Clearinghouse@opr.ca.gov

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California Department of Fish and Wildlife. 2023. Survey considerations for California Endangered Species Act candidate bumble bee species. Sacramento, California, USA.

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Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM
(MMRP)

PROJECT: Selma Casitas Project (Project)
Draft Environmental Impact Report (DEIR)

SCH No.: 2024070105

RECOMMENDED MITIGATION MEASURE	STATUS/DATE/INITIALS
Before Disturbing Soil or Vegetation	
Swainson's Hawk (SWHA)	
Recommended Mitigation Measure 1: SWHA Surveys Prior to Construction	
Recommended Mitigation Measure 3: SWHA Take Authorization	
Recommended Mitigation Measure 4: SWHA Foraging Habitat Mitigation	
Western Burrowing Owl (BUOW)	
Recommended Mitigation Measure 5: BUOW Surveys Prior to Construction	
Recommended Mitigation Measure 7: BUOW Take Authorization	
Crotch's Bumble Bee (CBB)	
Recommended Mitigation Measure 8: CBB Habitat Assessment	
Recommended Mitigation Measure 9: CBB Surveys Prior to Construction	
Recommended Mitigation Measure 11: CBB Take Authorization	
During Construction	
Swainson's Hawk (SWHA)	

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Recommended Mitigation Measure 2: SWHA Avoidance Buffer	
Western Burrowing Owl (BUOW)	
Recommended Mitigation Measure 6: BUOW Avoidance Buffer	
Crotch's Bumble Bee (CBB)	
Recommended Mitigation Measure 10: SWHA Avoidance Buffer	

Responses to Comment Letter 3

Comment 1: CDFW commented that the proposed Project site potentially could provide habitat or foraging ground for three sensitive species and Project implementation could negatively impact those three species. CDFW recommends incorporating mitigation measures to prevent potentially significant impacts to Swainson's hawk, western burrowing owl and Crotch's bumble bee.

> **Response to Comment 1**: The impact assessment under Impact a) of the biological resources section has been modified to identify Swaison's hawk, western burrowing owl and Crotch's bumble bee as sensitive species potentially occurring in the Project area. Mitigation Measures BIO-1 through BIO-11 have been incorporated into the DEIR to reduce potential impacts to less than significant. See Chapter Three of this Final EIR for the text amendment.

Comment 2: CDFW concurs with the inclusion of Mitigation Measure to protect nesting birds, however, CDFW recommends modifications to the included mitigation to further protect the species.

> **Response to Comment 2:** The nesting bird mitigation measure will be modified per CDFW recommendations. See Chapter Three of this Final EIR for the text amendment.

Comment Letter 4 – San Joaquin Valley Air Pollution Control District

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

June 30, 2025

Kamara Biawogi
City of Selma
Planning Department
1710 Tucker Street
Selma, CA 93662

Project: Draft Environmental Impact Report for Selma Casitas Project

District CEQA Reference No: 20250628

Dear Mr. Biawogi:

The San Joaquin Valley Air Pollution Control District (District) has reviewed the Draft Environmental Impact Report (DEIR) from the City of Selma (City) for the Selma Casitas Project. Per the DEIR, the project consists of the annexation of 75.3 acres, including the development of 600 multi-family dwelling units, 40,000 square feet of retail and food service uses, and a 19,200 square foot hotel with 100 guest rooms on 39.1 acres, with the remaining 36.2 acres left undeveloped at this time (Project). The Project is located west of Highland Avenue, north of Rose Avenue, and south of East Floral Avenue in Selma, CA (APNs: 385-260-33, 385-230-16, -38, and -39).

The District offers the following comments at this time regarding the Project:

1) **Project Related Emissions**

Per the DEIR, the Project consists of the annexation of 75.3 acres and the development of 600 multi-family dwelling units, 40,000 square feet of retail and food service uses, a 19,200 square foot hotel with 100 guest rooms and other off-site improvements on 39.1 acres within the 75.3 acres. The remaining 36.2-acres has no development planned at this time, and the annexation is to allow for adequate pipeline and utilities to service the 39.1-acre Project area.

Although off-site improvements, such as the installation of a sewage line, are proposed and no further development is currently planned for the remaining 36.2-acre portion, the District recommends that the City clarify that any future development of this area will be subject to environmental review in accordance with CEQA.

Samir Sheikh
Executive Director/Air Pollution Control Officer

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1a) Construction Emissions

The District recommends, to further reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available off-road construction equipment.

2) Health Risk Screening/Assessment

The District reviewed the Health Risk Assessment (HRA) for the Project and has the following comments:

2a) General Comments

- Evaluation of health risks requires detailed site-specific information (e.g., type and location of emission sources, proximity of the sources to sensitive receptors, and trip generation information). The required level of detail is typically not available until project specific approvals are being granted. Therefore, the District recommends that potential health risks be evaluated when approving future projects.
- The District recommends using the IDLEX emission rate(s) (in grams/vehicle-idle hour) from the Project Analysis section of CARB's online EMFAC tool located at: https://arb.ca.gov/emfac/project-analysis.
- Table 6 (Summary of Select Operational Emission Source Configurations) of the Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum indicates that there are 383.9 average daily diesel truck trips (out of 557 average daily trips total) associated with the operations of the proposed project. However, in Attachment B (Health Risk Assessments), the operational emissions are calculated using 278.6 daily truck trips (also out of 557 average daily trips total).

2b) AERMOD Comments

- The District recommends that idling activity be modeled as individual point sources, wherever the idling is expected to occur, and not as part of a line volume source that also incorporates travel emissions.
- The health impacts to offsite workers were not evaluated as part of the HRA, as offsite worker receptors were not included in the air dispersion modeling. The impacts to these receptors must also be evaluated in the HRA.
- The District recommends evaluating offsite truck travel for up to a quarter mile leading into and out of the project site (0.5 mile round trip).
- The dimensions used in the line volume sources representing truck travel (Plume Height: 20.4 ft and Plume Width: 29.53 ft) appear to be excessively

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large for this type of source. Please provide justification for the dimensions used.

2c) HARP2 Comments

- The HARP2 emissions inventory input file (UNMIT CON_IMPORTEMS.CSV) for the construction impacts indicate that there are zero emissions for construction activity. Additionally, there are no output files for the construction impacts. Please include these for review for this Project.

Modifications to the HRA based on the deficiencies listed above have the potential to cause the Project to exceed District health risk thresholds. Therefore, the District recommends revising the HRA to ensure the analysis accurately reflects the Project's potential air quality impacts.

3) Ambient Air Quality Analysis

Per the DEIR, Table 3.1-6 (Localized Concentrations of PM10, PM2.5, CO, and NOx for Operations) demonstrates the Project is expected to exceed 100 pounds per day of emissions. Although the DEIR references a study from the South Coast Air Quality Management District to support its determination that the addition of the Project's daily trips would not generate a CO hotspot at local intersections and operational CO impact would be less than significant, regional differences in terrain, meteorology, and background pollutant concentrations can significantly affect air quality emissions. As such, the District recommends an Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. An acceptable analysis would include emissions from both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Specific information for assessing significance, including screening tools and modeling guidance, is available online at the District's website: https://ww2.valleyair.org/permitting/ceqa/.

4) Under-fired Charbroilers

The Project may have restaurants with under-fired charbroilers. Such charbroilers may pose the potential for immediate health risk, particularly when located in densely populated areas or near sensitive receptors.

Since the cooking of meat can release carcinogenic PM2.5 species, such as polycyclic aromatic hydrocarbons, controlling emissions from new under-fired

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charbroilers will have a substantial positive impact on public health. The air quality impacts on neighborhoods near restaurants with under-fired charbroilers can be significant on days when meteorological conditions are stable, when dispersion is limited and emissions are trapped near the surface within the surrounding neighborhoods. This potential for neighborhood-level concentration of emissions during evening or multi-day stagnation events raises air quality concerns.

Furthermore, reducing commercial charbroiling emissions is essential to achieving attainment of multiple federal PM2.5 standards. Therefore, the District recommends that the DEIR include a measure requiring the assessment and potential installation, as technologically feasible, of particulate matter emission control systems for new large restaurants operating under-fired charbroilers.

The District is available to assist the City and project proponents with this assessment. Additionally, the District is currently offering substantial incentive funding that covers the full cost of purchasing, installing, and maintaining the system during a demonstration period covering two years of operation. Please contact the District at (559) 230-5800 or technology@valleyair.org for more information, or visit: https://ww2.valleyair.org/grants/restaurant-charbroiler-technology-partnership/

5) Vegetative Barriers and Urban Greening

There are residential units located east and south of the Project. There are also schools, such as the Selma High School, located northeast of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units, schools).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the update of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

6) Clean Lawn and Garden Equipment in the Community

Since the Project consists of residential and commercial development, gas-powered residential and commercial lawn and garden equipment have the potential to result in an increase of NOx and PM2.5 emissions. Utilizing electric lawn care equipment can provide residents with immediate economic, environmental, and health benefits.

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The District recommends the Project proponent consider the District's Clean Green Yard Machines (CGYM) program which provides incentive funding for replacement of existing gas powered lawn and garden equipment. More information on the District CGYM program and funding can be found at: https://ww2.valleyair.org/grants/clean-green-yard-machines-residential/ and https://ww2.valleyair.org/grants/zero-emission-landscaping-equipment-voucher-program/.

7) On-Site Solar Deployment

It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

8) Electric Infrastructure

The District recommends that the City require all nonresidential buildings be designed to provide electric infrastructure to support the use of on-road zero emissions vehicles, such as Medium-Heavy Duty trucks and HHD trucks associated with a commercial project.

To support and accelerate the installation of electric vehicle charging equipment and development of required infrastructure, the District offers incentives to public agencies, businesses, and property owners of multi-unit dwellings to install electric charging infrastructure (Level 2 and 3 chargers). The purpose of the District's Charge Up! Incentive program is to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. The District recommends that the City and project proponents install electric vehicle chargers at project sites, and at strategic locations.

Please visit https://ww2.valleyair.org/grants/charge-up for more information.

9) District Rules and Regulations

The District issues permits for many types of air pollution sources, and regulates some activities that do not require permits. A project subject to District rules and regulations would reduce its impacts on air quality through compliance with the District's regulatory framework. In general, a regulation is a collection of individual rules, each of which deals with a specific topic. As an example, Regulation II (Permits) includes District Rule 2010 (Permits Required), Rule 2201 (New and Modified Stationary Source Review), Rule 2520 (Federally Mandated Operating

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Permits), and several other rules pertaining to District permitting requirements and processes.

The list of rules below is neither exhaustive nor exclusive. Current District rules can be found online at: https://ww2.valleyair.org/rules-and-planning/current-district-rules-and-regulations. To identify other District rules or regulations that apply to future projects, or to obtain information about District permit requirements, the project proponents are strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

9a) District Rules 2010 and 2201 - Air Quality Permitting for Stationary Sources

Stationary Source emissions include any building, structure, facility, or installation which emits or may emit any affected pollutant directly or as a fugitive emission. District Rule 2010 (Permits Required) requires operators of emission sources to obtain an Authority to Construct (ATC) and Permit to Operate (PTO) from the District. District Rule 2201 (New and Modified Stationary Source Review) requires that new and modified stationary sources of emissions mitigate their emissions using Best Available Control Technology (BACT).

This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and may require District permits. Prior to construction, the Project proponent should submit to the District an application for an ATC. For further information or assistance, the project proponent may contact the District's SBA Office at (559) 230-5888.

9b) District Rule 9510 - Indirect Source Review (ISR)

The Project is subject to District Rule 9510 because it will receive a project-level discretionary approval from a public agency and will equal or exceed 9,000 square feet of space.

The purpose of District Rule 9510 is to reduce the growth in both NOx and PM emissions associated with development and transportation projects from mobile and area sources; specifically, the emissions associated with the construction and subsequent operation of development projects. The ISR Rule requires developers to mitigate their NOx and PM emissions by incorporating clean air design elements into their projects. Should the proposed development project clean air design elements be insufficient to meet the required emission reductions, developers must pay a fee that ultimately funds incentive projects to achieve off-site emissions reductions.

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Per Section 5.0 of the ISR Rule, an Air Impact Assessment (AIA) application is required to be submitted no later than applying for project-level approval from a public agency. As of the date of this letter, the District has not received an AIA application for this Project. Please inform the project proponent to immediately submit an AIA application to the District to comply with District Rule 9510 so that proper mitigation and clean air design under ISR can be incorporated into the Project's design. One AIA application should be submitted for the entire Project.

Information about how to comply with District Rule 9510 can be found online at: https://ww2.valleyair.org/permitting/indirect-source-review-rule-overview

The AIA application form can be found online at: https://ww2.valleyair.org/permitting/indirect-source-review-rule-overview/forms-and-applications/

District staff is available to provide assistance and can be reached by phone at (559) 230-5900 or by email at ISR@valleyair.org.

9c) District Rule 4002 (National Emissions Standards for Hazardous Air Pollutants)

In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002. This rule requires a thorough inspection for asbestos to be conducted before any regulated facility is demolished or renovated. Information on how to comply with District Rule 4002 can be found online at: https://ww2.valleyair.org/compliance/demolition-renovation/

9d) District Rule 4601 (Architectural Coatings)

The Project will be subject to District Rule 4601 since it is expected to utilize architectural coatings. Architectural coatings are paints, varnishes, sealers, or stains that are applied to structures, portable buildings, pavements or curbs. The purpose of this rule is to limit VOC emissions from architectural coatings. In addition, this rule specifies architectural coatings storage, cleanup and labeling requirements. Additional information on how to comply with District Rule 4601 requirements can be found online at: https://ww2.valleyair.org/media/tkgjeusd/rule-4601.pdf

9e) District Regulation VIII (Fugitive PM10 Prohibitions)

The project proponent may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in Regulation VIII,

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specifically Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.*

Should the project result in at least 1-acre in size, the project proponent shall provide written notification to the District at least 48 hours prior to the project proponents intent to commence any earthmoving activities pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). Also, should the project result in the disturbance of 5-acres or more, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials, the project proponent shall submit to the District a Dust Control Plan pursuant to District Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities). For additional information regarding the written notification or Dust Control Plan requirements, please contact District Compliance staff at (559) 230-5950.

The application for both the Construction Notification and Dust Control Plan can be found online at: https://ww2.valleyair.org/media/fm3jrbsq/dcp-form.docx

Information about District Regulation VIII can be found online at: https://ww2.valleyair.org/dustcontrol

9f) District Rule 4901 - Wood Burning Fireplaces and Heaters

The purpose of this rule is to limit emissions of carbon monoxide and particulate matter from wood burning fireplaces, wood burning heaters, and outdoor wood burning devices. This rule establishes limitations on the installation of new wood burning fireplaces and wood burning heaters. Specifically, at elevations below 3,000 feet in areas with natural gas service, no person shall install a wood burning fireplace, low mass fireplace, masonry heater, or wood burning heater.

Information about District Rule 4901 can be found online at: https://ww2.valleyair.org/compliance/residential-wood-smoke-reduction-program/

9g) Other District Rules and Regulations

The Project may also be subject to the following District rules: Rule 4102 (Nuisance) and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations).

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10)District Comment Letter

The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please contact Dylan Casares by e-mail at Dylan.Casares@valleyair.org or by phone at (559) 230-6574.

Sincerely,

Mark Montelongo
Director of Policy and Government Affairs

Daniel Martinez
Program Manager

Responses to Comment Letter 4:

Comment 1 (District Comment 1): Although off-site improvements, such as the installation of a sewage line, are proposed and no further development is currently planned for the remaining 36.2-acre portion, the SJVAPCD recommends that the City clarify that any future development of this area will be subject to environmental review in accordance with CEQA.

> **Response to Comment 1:** Page 2-6 of the DEIR states, "No development is proposed for the remaining 36.2 acres, which is currently identified as Medium Density Residential within the City's General Plan." The DEIR has been revised to include the clarification recommended by the SJVAPCD. See Chapter Three of this Final EIR for text changes.

Comment 2 (District Comment 1a): The SJVAPCD recommends, to further reduce impacts from construction-related diesel exhaust emissions, the Project should utilize the cleanest available offroad construction equipment.

Response to Comment 2: The Project Applicant acknowledges the San Joaquin Valley Air Pollution Control District's recommendation to further reduce construction-related diesel exhaust emissions. The *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* prepared for the Project is included as Appendix B of the Draft EIR. As detailed in the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* (last revised March 29, 2024), construction-related diesel exhaust emissions would not exceed any of the SJVAPCD's applicable thresholds of significance. Specifically, construction-related regional and cumulative impacts associated with construction of the proposed Project were found to be less than significant prior to the incorporation of mitigation (see Table 10). Furthermore, construction-related diesel exhaust emissions would not cause an exceedance of the SJVAPCD's health risk thresholds (see Table 15 for construction alone and Table 17 for combined construction and operations). Because impacts from construction emissions would be less than significant, no additional mitigation is required under CEQA. The Project Applicant will use off-road construction equipment in accordance with applicable regulatory requirements and industry best practices.

Comment 3 (Air District Comment 2/2a): The SJVAPCD recommends that potential health risks be evaluated when approving future projects. The comments notes that evaluation of health risks requires detailed site-specific information (e.g., type and location of emission sources, proximity of the sources to sensitive receptors, and trip generation information). The required level of detail is typically not available until project specific approvals are being granted.

Response to Comment 3: The *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* prepared for the Project is included as Appendix B of the Draft EIR. The *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* (last revised March 29, 2024) included a project-level Health Risk Assessment (HRA) that assessed the Project's impacts from construction and operations over a 70-year scenario, consistent with SJVAPCD's guidance. The HRA included an analysis of TACs (including DPM) performed using the EPA-approved AERMOD model, which is an air dispersion model accepted by the SJVAPCD for preparing HRAs. The HRA incorporated detailed site-specific information (e.g., type and location of emission sources, proximity of the sources to sensitive receptors, and trip generation information).

As applicable, the City of Selma will require additional analysis when approving future projects that have the potential to exceed the applicable health risk thresholds.

Comment 4 (Air District Comment 2/2a): The SJVAPCD recommends using the IDLEX emission rate(s) (in grams/vehicle-idle hour) from the Project Analysis section of CARB's online EMFAC tool.

Response to Comment 4: The *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* prepared for the Project is included as Appendix B of the Draft EIR. As detailed in the "*Health Risk Assessment Assumptions"* section of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* (last revised March 29, 2024 (pages 14-16), on-site truck traffic and on-site truck idling were included as emission sources in the HRA. Emission factors, including those used to estimate emission from truck idling, were obtained from CARB's EMFAC2021. CARB's EMFAC2021 is the EPA-approved version of the EMFAC model. EMFAC2021 was officially released to the public on May 2, 2022, and approved by the EPA effective November 15, 2022. CARB released EMFAC2025 in 2025, after the emission analysis for the Project had been completed. EMFAC2021 is the latest version of the EMFAC emissions inventory model that has received official approval from EPA. No changes to the HRA or air quality analysis are required in response to this comment.

Comment 5 (Air District Comment 2/2a): The SJVAPCD notes that Table 6 (Summary of Select Operational Emission Source Configurations) of the Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum indicates that there are 383.9 average daily diesel truck trips (out of 557 average daily trips total) associated with the operations of the proposed project. However, in Attachment B (Health Risk Assessments), the operational emissions are calculated using 278.6 daily truck trips (also out of 557 average daily trips total).

Response to Comment 5: As detailed in Attachment B (Health Risk Assessments) (page 253 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*), the HRA was conducted using 416.2 daily diesel truck trips. The breakdown of truck trips out of the total project trips is shown on page 252 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* and the diesel truck trips are shown on page 254 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*. These trips are also summarized below.

Truck Vehicle Fleet	Total Daily Truck Trips (Trips/day)	Percent Diesel	Number of Daily Diesel Trips (Trips/day)
LHD1	284.293	47.1%	134.0
LHD2	76.687	67.9%	52.0
MHD	131.751	86.5%	114.0
HHD	117.801	98.6%	116.1
Heavy Trucks Total	**610.532**	**—**	**416.2**

Table 6 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* was revised to reflect the number of trips used to conduct the operational HRA (416.2 diesel-fueled truck trips per day). Please see Chapter Three of this FEIR for text changes.

Comment 6 (Air District Comment 2b): The SJVAPCD recommends that idling activity be modeled as individual point sources, wherever the idling is expected to occur, and not as part of a line volume source that also incorporates travel emissions. The health impacts to offsite workers were not evaluated as part of the HRA, as offsite worker receptors were not included in the air dispersion modeling. The impacts to these receptors must also be evaluated in the HRA.

Response to Comment 6: The HRA conducted for the Project followed the methodology outlined in the *Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (2015) and the *California Air Pollution Control Officers Association (CAPCOA) Health Risk Assessment Guidance* (2009). In accordance with this guidance, receptors were placed at all identified sensitive receptor locations within ¼ mile (1,320 feet) of the Project site, as well as at the nearest receptor locations in each cardinal direction.

Consistent with OEHHA and CAPCOA definitions, sensitive receptors include land uses where populations more susceptible to the adverse effects of air pollution are present, such as residences, schools, daycare centers, hospitals, and convalescent facilities. Offsite worker receptors are not identified as sensitive receptors under OEHHA (2015)[1] or CAPCOA (2009)[2] guidance.

In addition, the Project's HRA was prepared consistent with the SJVAPCD's GAMAQI, which is the District's current and primary guidance document for evaluating air quality impacts under CEQA. The GAMAQI emphasizes that "impacts on sensitive receptors are of particular concern," reflecting the SJVAPCD's focus on locations where more vulnerable populations may be exposed (e.g., residences, schools, hospitals, daycare centers). Accordingly, receptor placement for CEQA-level analyses prioritizes sensitive receptor locations in proximity to a project site.[3]

The GAMAQI supersedes the SJVAPCD's earlier *Environmental Review Guidelines* (August 2000); however, the 2000 *Environmental Review Guidelines* includes a definition of "sensitive receptors". The SJVAPCD's Environmental Review Guidelines define sensitive receptors as facilities that house or attract children, the elderly, and people with illnesses—i.e., populations especially susceptible to adverse air-quality effects—reinforcing that these are the receptors to be evaluated for potential risk in CEQA documents.[4] While the 2000 *Environmental Review Guidelines* included a general definition of "sensitive receptors," the same principle is incorporated into the GAMAQI, which emphasizes that "impacts on sensitive receptors are of particular concern." This framework, together with the GAMAQI, supports the use of sensitive-receptor receptor grids for project-level HRAs and does not identify offsite worker receptors as sensitive receptors requiring separate HRA modeling under CEQA.

The formal SJVAPCD guidance documents aligns with broader CEQA practice and CAPCOA methodology, which center health-risk evaluation on sensitive populations. Consequently, the HRA's receptor siting—at sensitive receptors within the appropriate

[1] Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. February 2015. Sacramento: California Environmental Protection Agency. https://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk.

[2] California Air Pollution Control Officers Association (CAPCOA). Health Risk Assessments for Proposed Land Use Projects. July 2009. https://www.capcoa.org/2009/07/01/health-risk-assessments-for-proposed-land-use-projects/.

[3] San Joaquin Valley Air Pollution Control District (SJVAPCD). Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI). March 19, 2015. https://ww2.valleyair.org/media/0shm0mlk/gamaqi-2015.pdf.

[4] San Joaquin Valley Air Pollution Control District (SJVAPCD). Environmental Review Guidelines. August 2000. https://www.valleyair.org/transportation/EnvironmentalReviewGuidelines.pdf.

study area (1/4-mile from the project boundary)—follows SJVAPCD's GAMAQI and is sufficient for determining project-level health risk significance under CEQA. As such, the HRA appropriately evaluates potential health risks in accordance with applicable state guidance, and no further analysis is required.

Comment 7 (Air District Comment 2b): The District recommends evaluating offsite truck travel for up to a quarter mile leading into and out of the project site (0.5 mile round trip).

Response to Comment 7: As detailed in *Attach*ment B (Health Risk Assessments) of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*, emissions from offsite truck travel were accounted for in the operational HRA. A summary of the emission estimates for the four offsite road segments used in the construction analysis are provided on page 301 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum.*

The operational HRA conducted for the Project evaluated offsite truck travel consistent with the SJVAPCD's recommendation to consider roadway segments within a quarter mile of the Project site (0.5 mile round trip). Specifically, the analysis included five offsite road segments, which are summarized on page 321 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*. The emission estimates for these five offsite road segments are provided on pages 328 and 329 of the same technical memorandum.

Accordingly, the Draft EIR's analysis provides substantial evidence that offsite truck travel was considered in the HRA, and the conclusions regarding the Project's operational health risk impacts remain valid. Because the comment does not provide new information that would alter the impact determinations, no further analysis is required under CEQA.

Comment 8 (Air District Comment 2b): The dimensions used in the line volume sources representing truck travel (Plume Height: 20.4 ft and Plume Width: 29.53 ft) appear to be excessively large for this type of source. Please provide justification for the dimensions used.

Response to Comment 8: The roadway emissions were modeled as line-volume sources consistent with CARB's HARP2 framework and standard AERMOD/ISC volume-source formulations. In this approach, the "plume height" and "plume width" represent the initial vertical and lateral mixing dimensions of the traffic exhaust cloud within the vehicle-induced turbulence zone rather than the physical exhaust pipe height. Accordingly, the operational HRA used a plume height of 20.4 feet (≈6.2 m) and a plume

width of 29.53 feet (≈9.0 m) to represent the near-roadway mixing zone for heavy-duty truck travel.

These values are supported by published regulatory guidance and recent California practice:[5,6,7,8]

- Initial vertical dimension (plume height): Multiple California agency protocols recommend estimating the top of plume height using emissions- or traffic-weighted values that reflect a mix of heavy-duty trucks and light-duty vehicles, with typical reference heights of ~6.8 m for heavy-duty trucks and ~2.6 m for light-duty vehicles. The selected 6.2 m is well within this range and is consistent with methods that (1) weight by the fraction of diesel emissions or heavy-duty trips on the segment and (2) add allowance for initial plume rise within the vehicle wake.

- Initial lateral dimension (plume width): Regional guidance for roadway line-volume sources commonly defines the lateral dimension as the traveled way width plus a buffer for vehicle wake/mixing (often ~3 m on each side). A width on the order of ~9 m aligns with lanes plus shoulder/wake allowances used in recent CEQA technical reports and screening protocols for freeway and truck-route segments.

- Model implementation in HARP2/AERMOD: CARB's HARP2 user documentation explains that the volume-source "width" and "height" entered in the interface correspond to the initial lateral (SYINIT) and vertical (SZINIT) dimensions used by the ISC/AERMOD algorithms, with standard conversion factors (e.g., dividing physical mixing dimensions by ~2.15 or 4.3, per the underlying model equations). Thus, the selected physical mixing dimensions (≈6.2 m vertical, ≈9.0 m lateral) translate to appropriate SYINIT/SZINIT inputs consistent with the regulatory formulation.

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[5] California Air Resources Board (CARB). Hotspots Analysis and Reporting Program (HARP2) User Guide. Sacramento, CA: California Environmental Protection Agency, 2020. https://ww2.arb.ca.gov/resources/documents/harp2.

[6] Santa Barbara County Air Pollution Control District (SBCAPCD). Health Risk Assessment and Dispersion Modeling Guidelines. Santa Barbara, CA: Santa Barbara County APCD, March 2017. https://www.ourair.org/wp-content/uploads/HRA-Guidelines.pdf.

[7] United States Environmental Protection Agency (U.S. EPA). User's Guide for the AMS/EPA Regulatory Model – AERMOD. EPA-454/B-03-001. Research Triangle Park, NC: U.S. EPA Office of Air Quality Planning and Standards, September 2004 (revised 2016). https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models.

[8] City of San Diego. Technical Air Quality Report for the Pure Water Program. Prepared by ICF, April 2018. Available at: https://www.sandiego.gov/sites/default/files/purewater_eir_appendixc_airquality.pdf.

Given the truck emphasis on the evaluated segments, selecting a plume height ≈6.2 m (near the heavy-duty reference value) and plume width ≈9.0 m provides a conservative and technically supported representation of the initial mixing zone for diesel exhaust, consistent with HARP2 conventions and California CEQA HRA practice. No revisions to the dispersion inputs are warranted.

Comment 9 (Air District Comment 2c): The HARP2 emissions inventory input file (UNMIT CON_IMPORTEMS.CSV) for the construction impacts indicate that there are zero emissions for construction activity. Additionally, there are no output files for the construction impacts. Please include these for review for this Project.

Response to Comment 9: The relevant files for the construction HRA are provided as part of Attachment B of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* prepared for the Project and show that emissions from construction activities were not assumed to be zero. The *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* in its entirety is included as Appendix B of the Draft EIR.

Emissions for construction activity associated with development with the Project were included and are summarized on pages 300 – 301 of the air quality technical memorandum, while the combined HARP2 results are provided on pages 302 - 303. Additional emissions and HARP2 associated with construction from the offsite pipeline improvements are provided on pages 304 to 312. As such, emissions from construction activity were adequately accounted for in the analysis and the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* (included as Appendix B of the Draft EIR). Therefore, the conclusions of the Draft EIR remain valid, and no revisions to the analysis are warranted in response to this comment.

Comment 10 (Air District Comment 3): Per the Draft EIR, Table 3.1-6 (Localized Concentrations of PM10, PM2.5, CO, and Nox for Operations) demonstrates the Project is expected to exceed 100 pounds per day of emissions. Although the Draft EIR references a study from the South Coast Air Quality Management District to support its determination that the addition of the Project's daily trips would not generate a CO hotspot at local intersections and operational CO impact would be less than significant, regional differences in terrain, meteorology, and background pollutant concentrations can significantly affect air quality emissions. As such, the District recommends an Ambient Air Quality Analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of State or National Ambient Air Quality Standards. An acceptable analysis would include emissions from

both project-specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

Response to Comment 10: As shown in Table 14 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*, the Project would exceed the SJVAPCD 100-pound-per-day screening threshold for CO but would not exceed other operational screening thresholds for each of the criteria pollutants. Therefore, based on the SJVAPCD's guidance, the operational emissions would not cause an ambient air quality standard violation for NOX, PM10, or PM2.5. Further analysis is needed to determine whether impacts would be significant for CO, which is provided in the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* and is further justified below.

As shown in Table 14 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*, the majority of CO emissions would be from mobile sources, such as passenger vehicles driven by future residents, employees, and other visitors to access the project site. It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Accordingly, vehicle emissions standards have become increasingly more stringent to help remedy this impact.

The analysis prepared for CO attainment in the South Coast Air Basin (SoCAB) by the South Coast Air Quality Management District (SCAQMD) has been used to assist in evaluating potential for CO exceedances in other air basins. Although the SoCAB and the SCAQMD would not be the applicable air basin or air district for the Project, applying this guidance is appropriate in this analysis because CO exceedances are caused by idling vehicles and regardless of air district. The CO hotspot analysis contained in the SCAQMD 1992 CO Plan is used to determine potential CO hotspot impacts from the proposed Project, because by using the 1992 CO Plan as a worst-case scenario, the proposed Project can measure CO impacts against intersections that experienced significantly more vehicle traffic than adjacent to the proposed Project. The busiest intersection evaluated in the 1992 CO Plan was that at Wilshire Boulevard and Veteran Avenue, which has a daily traffic volume of approximately 100,000 vehicles per day. Subsequently the CO Plan determined that no CO hotspot would occur even with 100,000 vehicles per day at this one intersection.

The traffic volumes near the project site, with project trips, are provided in the project-specific traffic impact analysis. The project-specific traffic impact study reported the

number of average daily trips for the proposed mixed-use project: 10,786 average weekday trips.[9] The traffic volumes at intersections in the study area around the project are lower than what was analyzed in the 1992 CO Plan. Therefore, none of the intersections near the project site would have peak-hour traffic volumes exceeding those at the intersections modeled in the 1992 CO Plan, nor would there be any reason unique to the local meteorology to conclude that this intersection would yield higher CO concentrations if modeled in detail because the project site is not located in an area where air flow would be severely restricted, such as a tunnel or canyon. In conclusion, the addition of the proposed project's daily trips would not generate a CO hotspot at local intersections and operational CO impact would be less than significant.

Accordingly, the analysis presented in the Draft EIR provides substantial evidence to support the conclusions regarding the Project's potential to contribute to a violation of State or National Ambient Air Quality Standards. The methodologies and assumptions employed are consistent with applicable regulatory guidance and thresholds of significance. Therefore, the conclusions of the Draft EIR remain valid, and no revisions to the analysis are warranted in response to this comment.

Comment 11 (Air District Comment 4): The Project may have restaurants with under-fired charbroilers. Such charbroilers may pose the potential for immediate health risk, particularly when located in densely populated areas or near sensitive receptors.

Since the cooking of meat can release carcinogenic PM2.5 species, such as polycyclic aromatic hydrocarbons, controlling emissions from new under-fired charbroilers will have a substantial positive impact on public health. The air quality impacts on neighborhoods near restaurants with under-fired charbroilers can be significant on days when meteorological conditions are stable, when dispersion is limited and emissions are trapped near the surface within the surrounding neighborhoods. This potential for neighborhood-level concentration of emissions during evening or multi-day stagnation events raises air quality concerns.

Furthermore, reducing commercial charbroiling emissions is essential to achieving attainment of multiple federal PM2.5 standards. Therefore, the District recommends that the Draft EIR include a measure requiring the assessment and potential installation, as technologically feasible, of

[9] JLB Traffic Engineering, Inc. 2023.Traffic Impact Analysis Report: Casitas Selma Located on the Southwest Quadrant of Highland Avenue and Floral Avenue in the City of Selma, California. October 10.

particulate matter emission control systems for new large restaurants operating under-fired charbroilers.

> **Response to Comment 11:** While development of land uses may result in stationary source emissions such as restaurants with charbroilers or buildings with emergency generators, these types of land uses would not be large emitters. Additionally, they would be controlled by SJVAPCD through permitting and would be subject to further study and health risk assessment prior to the issuance of any necessary air quality permits under Regulation II. According to SJVAPCD's GAMAQI, Regulation II ensures that stationary source emissions (permitted sources) would be reduced or mitigated below SJVAPCD significance thresholds of ten in one million cancer risk and one for acute risk at the maximally exposed individual. Project tenants and developers will be responsible for complying with all applicable rules and regulations. Therefore, individual restaurants that would include charbroilers would be required to assess toxic air contaminants associated with charbroilers as applicable. Therefore, the conclusions of the Draft EIR remain valid, and no revisions to the analysis are warranted in response to this comment.

Comment 12 (Air District Comment 5): There are residential units located east and south of the Project. There are also schools, such as the Selma High School, located northeast of the Project. The District suggests the City consider the feasibility of incorporating vegetative barriers and urban greening as a measure to further reduce air pollution exposure on sensitive receptors (e.g., residential units, schools).

While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, vegetative barriers have been shown to be an additional measure to potentially reduce a population's exposure to air pollution through the interception of airborne particles and the update of gaseous pollutants. Examples of vegetative barriers include, but are not limited to the following: trees, bushes, shrubs, or a mix of these. Generally, a higher and thicker vegetative barrier with full coverage will result in greater reductions in downwind pollutant concentrations. In the same manner, urban greening is also a way to help improve air quality and public health in addition to enhancing the overall beautification of a community with drought tolerant, low-maintenance greenery.

> **Response to Comment 12:** Consistent with the comment, the Air Quality section of the Draft EIR evaluates the potential impact of project operations on sensitive receptors. As shown in Table 17 of the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum*, the Project would not exceed the cancer risk, chronic risk, or acute risk

threshold levels in any scenario analyzed. Therefore, mitigation is not required to reduce impacts related to air pollution exposure on sensitive receptors and no revisions to the analysis are warranted in response to this comment. Nonetheless, the Project Applicant acknowledges the SJVAPCD's recommendation to further reduce air pollution exposure on sensitive receptors and will, to the extent feasible, incorporate vegetative barriers and urban greening accordance with applicable regulatory requirements and industry best practices.

All developments within the Project would be required to meet the City's landscaping requirements, which will be enforced through Conditions of Approvals. The City requires urban greening to be incorporated into projects and has the discretion to require appropriate vegetative barriers in transition areas from commercial to residential. Therefore, the City's design guidelines that will be enforced through Conditions of Approvals and the analysis contained in the Draft EIR already address the concerns raised in the comment.

Comment 13 (Air District Comment 6): Since the Project consists of residential and commercial development, gas-powered residential and commercial lawn and garden equipment have the potential to result in an increase of NOx and PM2.5 emissions. Utilizing electric lawn care equipment can provide residents with immediate economic, environmental, and health benefits.

The District recommends the Project proponent consider the District's Clean Green Yard Machines (CGYM) program which provides incentive funding for replacement of existing gas powered lawn and garden equipment. More information on the District CGYM program and funding can be found at: https://ww2.valleyair.org/grants/clean-green-yard-machines-residential/ and https://ww2.valleyair.org/grants/zero-emission-landscaping-equipment-voucherprogram/.

Response to Comment 13: The comment is acknowledged. The Project consists of residential and commercial development that will comply with all applicable SJVAPCD, State, and federal air quality rules and regulations. The Draft EIR includes an evaluation of the Project's potential to generate emissions of criteria air pollutants, including NOx and PM2.5, and concludes that impacts would be less than significant after implementation of applicable regulations and mitigation measures.

The SJVAPCD's CGYM program is a voluntary incentive program that provides funding to replace existing gas-powered lawn and garden equipment with zero-emission equipment. While participation in this program is not a requirement of CEQA or any applicable regulatory program, residents or property managers choosing to utilize electric lawn and garden equipment would further reduce localized emissions and provide environmental and public health benefits consistent with regional air quality goals. The City acknowledges the SJVAPCD's recommendation; however, since the Project will comply with all applicable rules and regulations, no additional analysis or revisions to the Draft EIR are required in response to this comment.

Comment 14 (Air District Comment 7): It is the policy of the State of California that renewable energy resources and zero-carbon resources supply 100% of retail sales of electricity to California end-use customers by December 31, 2045. While various emission control techniques and programs exist to reduce air quality emissions from mobile and stationary sources, the production of solar energy is contributing to improving air quality and public health. The District suggests that the City consider incorporating solar power systems as an emission reduction strategy for the Project.

Response to Comment 14: The comment is acknowledged. The Project is a commercial mixed-use development located in the City of Selma and will be required to comply with all applicable federal, State, and local rules and regulations regarding energy efficiency and renewable energy. Under the 2022 California Building Energy Efficiency Standards (Title 24, Part 6, California Code of Regulations), newly constructed nonresidential buildings—including commercial and mixed-use buildings with at least 80 percent of the floor area devoted to nonresidential uses—are required to incorporate solar photovoltaic (PV) systems sized in accordance with the standards, unless specific exemptions apply. In addition, Title 24 requires battery storage systems to be installed in conjunction with solar PV systems for nonresidential buildings, unless one of the limited exemptions is met.[10],[11]

[10] California Energy Commission (CEC). 2022 Building Energy Efficiency Standards: Nonresidential Solar PV Requirements. Sacramento, CA: CEC, 2022. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/energy-code-support-center/2022-6.

[11] California Energy Commission (CEC). 2022 Building Energy Efficiency Standards: Nonresidential Battery Storage Systems Requirements. Sacramento, CA: CEC, 2022. https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/energy-code-support-center/2022-7.

The Draft EIR evaluates the Project's energy use and associated air quality and greenhouse gas emissions and demonstrates consistency with applicable regulatory requirements and thresholds of significance. Compliance with the Title 24 requirements for solar PV and battery storage, as enforced by the City of Selma at the time of building permit issuance, will ensure that the Project reduces its reliance on non-renewable energy sources and is consistent with statewide policy goals for renewable energy. Therefore, consistent with CEQA Guidelines Section 15126.4(a)(1)(D), no additional mitigation measures or revisions to the Draft EIR are required in response to this comment.

Comment 15 (Air District Comment 8): The SJVAPCD recommends that the City require all nonresidential buildings be designed to provide electric infrastructure to support the use of on-road zero emissions vehicles, such as Medium-Heavy Duty trucks and HHD trucks associated with a commercial project.

Response to Comment 15: The District recommends that the City require electric vehicle chargers at project sites and at strategic locations.

This comment provides information about the District's Charge Up! Incentive program to promote clean air alternative-fuel technologies and the use of low or zero-emission vehicles. This comment is noted and does not require any action by the City or the Project proponents at this time. The Project would be built to meet all statewide and local development codes. Furthermore, MM AIR-2d was recommended in the *Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum* and included in the Draft EIR to reduce regional air pollutant emissions during operations and would further promote the electric infrastructure to support the use of on-road zero emissions vehicles. MM AIR-2d is copied below for ease of reference.

MM AIR-2d Transportation Demand Management Program

Prior to issuance of the certificate of occupancy for the first non-residential building associated with the project, the applicant shall retain a qualified transportation consultant to prepare and submit a Transportation Demand Management (TDM) program to the City of Selma for review and approval. The TDM program shall identify measures to reduce daily gasoline-powered and diesel-powered vehicle trips to the project site, with an objective of a minimum 5 percent reduction in gasoline-fueled and diesel-fueled trips. The approved TDM program shall be implemented in conjunction with the start of operations of the project. Examples of trip reduction measures may include, but are not limited to, the following:

- Post transit information (maps, schedules, fares, etc.) in public areas of the project that is accessible to employees, patrons, and other project occupants;
- Provide employer-subsidized transit passes;
- Sponsor an employee ride sharing program;
- Provide employee lockers for personal items;
- In non-residential uses, provide employees with an employee only restroom with a shower;
- Provide secure indoor bicycle parking (racks or lockers) for employees and/or residents;
- Provide customer or visitor bicycle parking (racks) in safe and convenient locations;
- For non-residential components of the project, allow flex scheduling or compressed scheduling practices;
- Provide preferential parking spaces for clean air vehicles;
- Provide charging stations for electric vehicles; and
- If home delivery services are provided by any of the non-residential components of the project, the home delivery services shall be performed using low-emission or alternative-fueled (electric, natural gas, hydrogen, etc.) vehicles

Comment 16 (Air District Comment 9): The SJVAPCD provided a list of rules and regulations that may be relevant to the project.

Response to Comment 16: The Project will comply with all applicable SJVAPCD rules and regulations, including but not limited to District Rule 2010, 2201,9510, 4002, 4601, 4901, and Regulation VIII, as described in the DEIR.

Comment Letter 5 – California Department of Transportation

CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, GOVERNOR

California Department of Transportation
DISTRICT 6 OFFICE
1352 WEST OLIVE AVENUE | P.O. BOX 12616 | FRESNO, CA 93778-2616
(559) 981-7284 | FAX (559) 488-4195 | TTY 711
www.dot.ca.gov

June 12, 2025

FRE-99-6.758
City of Selma – Casitas Selma
Draft Environmental Impact Report
GTS #: https://ld-igr-gts.dot.ca.gov/district/6/report/26345

SENT VIA EMAIL

Mx. Lupe Macias, Assistant Planner
City of Selma
1710 Tucker Street
Selma, CA 93662
lmacias@cityofselma.com

Dear Mx. Macias:

Thank you for providing Caltrans the opportunity to review the Draft Environmental Impact Report (DEIR)for the City of Selma, Casitas Selma Commercial/Residential Development project in the City of Selma. The Project proposes to develop approximately 36.5 acres with a mix of residential, commercial and park space.

The project site is located in the southwest quadrant of State Route 99/ Floral Avenue interchange approximately 300 feet west of State Route 99.

The mission of Caltrans is to provide a safe and reliable transportation network that serves all people and respects the environment. The Local Development Review (LDR) process reviews land use projects and plans through the lenses of our mission and state planning priorities of infill, conservation, and travel-efficient development. To ensure a safe and efficient transportation system, we encourage early consultation and coordination with local jurisdictions and project proponents on all development projects that utilize the multimodal transportation network.

Caltrans provides the following comments consistent with the State's smart mobility goals that support a vibrant economy and sustainable communities:

Caltrans has completed its review of the Draft Environmental Impact Report (DEIR) for the Casitas Selma development located in the City of Selma. Caltrans previously provided comments on, and received applicant responses to, the updated Traffic Impact Analysis (TIA) dated January 25, 2024. However, the DEIR references an earlier version of the TIA dated October 10, 2023, included as Appendix F. The DEIR should be revised to reference and incorporate the most recent TIA dated January 25, 2024, to ensure consistency with the latest analysis and comment responses.

"Provide a safe and reliable transportation network that serves all people and respects the environment"

Letter 5, page 2

Mx. Macias– City of Selma – Casitas Selma Draft Environmental Impact Report
June 12, 2025
Page 2

Additionally, please refer to Caltrans' previous comment letter dated June 28, 2024. However, note that the fair share contribution referenced in that letter is no longer applicable. Consistent with Senate Bill 743, Caltrans does not require level of service (LOS)-based mitigation under CEQA. Potential contributions may still be considered outside the scope of CEQA if they are part of a development impact fee program, development agreement, or necessary for access-related safety improvements to the State Highway System.

If you have any other questions, please call or email: Keyomi Jones, Associate Transportation Planner at (559) 981-7284 or keyomi.jones@dot.ca.gov.

Sincerely,

Mr. Dave Padilla, Branch Chief,
Local Development Review

Enclosure

Responses to Comment Letter 5

Comment 1: Caltrans reviewed the DEIR and associated Traffic Impact Analysis (TIA) and found that the DEIR references an older version of the TIA. Caltrans recommends that the traffic section of the DEIR be revised to incorporate the most recent version of the TIA to ensure consistency with the latest analysis. Also to note that Caltrans no longer requires LOS-based mitigation under CEQA.

Response to Comment 1: The City recognizes that the older version of the TIA, dated October 10, 2023, was inadvertently utilized in the DEIR. The updated version, dated January 25, 2024, is attached to this Final EIR as Appendix A. The analysis and specific impact assessment as discussed in Impact a) of Chapter 3.7 Transportation/Traffic remains largely the same in the updated TIA. The TIA was updated to modify the results of Cumulative Year 2046 plus Project Level of Service Analysis, which ruled out the viability of Alternative 2 – Roundabout. The revised TIA states, "As queuing from the intersection of Walmart Main Driveway at Floral Avenue is projected to back into this intersection, a roundabout will not function properly at this location. Therefore, this alternative has been

determined to not be viable and has been omitted from the LOS table and conclusion as a result." This text will be incorporated into the DEIR, as shown in Chapter Three of this document. The TIA was also updated to discuss alternative transportation modes, including pedestrian, bicycle and transit services, which will be incorporated into the DEIR. Please see Chapter Three for text changes.

Comment Letter 6 – Selma Auto Mall

From: Jerome Keene
To: Emily Bowen
Cc: Kamara Biawogi; Lupe Macias
Subject: Fw: Notice of Availability- Draft Environmental Impact Report for Selma Casitas Project
Date: Tuesday, July 8, 2025 9:28:45 AM
Attachments: image001.jpg
Outlook-ilrsf1vi.png
Outlook-ce3ifo4z.png
Outlook-e0a1hwli.png

FYI

Jerome Keene, MAS, AICP
Deputy City Manager
1710 Tucker Street, Selma, CA 93662
559.891.2200 ext. 2267

Have you signed up for our newsletter?

Sign up today!

From: Lupe Macias <LMacias@cityofselma.com>
Sent: Tuesday, July 8, 2025 8:08 AM
To: Jerome Keene <JeromeK@cityofselma.com>; Kamara Biawogi <KamaraB@cityofselma.com>
Subject: FW: Notice of Availability- Draft Environmental Impact Report for Selma Casitas Project

fyi

From: Roseana Gomez <dealersec@selmaautomall.com>
Sent: Monday, July 7, 2025 5:30 PM
To: Lupe Macias <LMacias@cityofselma.com>
Subject: FW: Notice of Availability- Draft Environmental Impact Report for Selma Casitas Project

Good Afternoon Lupe -
On behalf of Dwight Nelson –
The Stillman Street Plan originated back in 1994/95 was developed by the City Council at the time along with the City of Selma Engineer, City of Selma Manager, City of Selma Fire Chief, City of Selma Police Chief, City of Selma Planning Commission. Floral was impacted back then with traffic issues that were exasperated by the Hwy 99 Overpass at Floral which to this day has never been alleviated. The solution to this was to Plan for Stillman Street to be a DIVIDED 4 LANE THOUROUGH FAIR that would allow easy access to Hwy 43 and to North and South Bound Hwy 99 so traffic did not have to congest Floral and allow Big Box Stores to come to Selma. The Stillman Street Development plan and the plans initiated for the growth of the City of Selma in 1995 are being deviated from.

The plans originally installed in the early 1990s should be adhered to and can be found in the citys records with a little effort.
Thank you -

Roseana Gomez - *Dealer's Assistant*
SELMA AUTO MALL
2755 Auto Mall Drive | Selma, CA 93662
Phone: 559.896.5000 x2050
Fax: 559.896.4349
www.selmaautomall.com

From: LMacias@cityofselma.com
To: mhooton@selmausd.org, yvette.alves@selmausd.org, ldr-d6@dot.ca.gov, mstites@fresnocog.org, t1my@pge.com, mramire6@socalgas.com, environmentalhealth@fresnocountyca.gov, ceqa@valleyair.org, stormwater@waterboards.ca.gov, ed.gomes@selmausd.org, rrangel@selmausd.org, jessica.villarreal@selmausd.org, arakel@arisiangroup.com, Annalisa.Perea@qkinc.com, bmirelez@nccrc.org, bramirez@cveas.com, chamberdirector@cityofselma.com, carteaga@nccrc.org, christinerusk5@gmail.com, cliff@tutelian.com, claird@fresnoedc.com, djl@terrapacific.net, DGN1443@aol.com, harveysingh103@gmail.com, irmanunez1014@gmail.com, jaMartinez@nccrc.org, Jeff.Reid@mccormickbarstow.com, joandesigningwomen@att.net, mdansby@fresnoedc.com, risnbub@yahoo.com, news@stewawelnews.com, michele.garza@sbcglobal.net, tnahal10@gmail.com, kmakfm@sbcglobal.net, Fresno3rdM@aol.com, dealersec@selmaautomall.com, rosemary_alanis@yahoo.com, badhesha@gmail.com, jrsbandit@sbcglobal.net, Scott@fahrneygroup.com
Cc: KamaraB@cityofselma.com, JeromeK@cityofselma.com
Sent: 5/29/2025 8:41:51 AM Pacific Daylight Time
Subject: Notice of Availability- Draft Environmental Impact Report for Selma Casitas Project

Good morning.

The City of Selma has prepared a Draft Environmental Impact Report (EIR) for the Selma Casitas Project, in accordance with the California Environmental Quality Act (CEQA).

The Draft EIR is now available for public review. The review period was initiated on May 23, 2025 and ends on July 7, 2025. We encourage you to review the document and provide your comments as early as possible.

The Draft EIR can be accessed on the City's website and through CEQAnet:

https://www.cityofselma.com/departments/community_development/projects_and_studies.php#outer-601sub-615

https://ceqanet.opr.ca.gov/2024070105/2

If you prefer to receive a copy of the Draft EIR by email, please contact the Planning Department at:
Planningdept@cityofselma.com
559-891-2209

Your feedback is important and will be considered in the preparation of the Final EIR. Please submit all comments in writing by July 7, 2025.

Thank you for your participation in this review process.

Lupe Macias
Assistant Planner
1710 Tucker Street
Selma, CA 93662
559.891.2200 ext. 3125
www.cityofselma.com
Sign up for our Newsletter!

Responses to Comment Letter 6:

Comment 1: The Stillman Street Plan originated back in 1994/95 was developed by the City Council at the time along with the City of Selma Engineer, City of Selma Manager, City of Selma Fire Chief, City of Selma Police Chief, City of Selma Planning Commission. Floral was impacted back then with traffic issues that were exasperated by the Hwy 99 Overpass at Floral which to this day has never been alleviated. The solution to this was to Plan for Stillman Street to be a DIVIDED 4 LANE THOUROUGH FAIR that would allow easy access to Hwy 43 and to North and South Bound Hwy 99 so traffic did not have to congest Floral and allow Big Box Stores to come to Selma. The Stillman Street Development plan and the plans initiated for the growth of

the City of Selma in 1995 are being deviated from. The plans originally installed in the early 1990s should be adhered to and can be found in the city's records with a little effort.

Response to Comment 1: The City of Selma appreciates the comment. According to the City of Selma General Plan Circulation element, a road is considered to be a 'major arterial' or 'arterial' if it were a divided four lane thoroughfare. In the proposed Project vicinity, Highland is considered a major arterial while Floral is an arterial. Other roads in the immediate Project vicinity include Rose, a Collector, and Stillman, a Minor Collector Road. The General Plan identifies methodology for how roads are used along with their relation to other roads for establishing their designation. Stillman being a Minor Collector Road matches the recommendation of the traffic study prepared for this project.

Specifically, under local roads and minor collectors, the General Plan states:

> "Local streets shall not carry an unreasonable level of through traffic. Should it be determined that a local street is carrying an unacceptable level of through traffic, the City may use appropriate means to reduce traffic through creation of one-way traffic flow, installation of traffic calming devices, and/or any other means deemed to be acceptable under the Vehicle Code of the State of California. Traffic calming features in conformance with Table 2-1 are encouraged when warranted."

Stillman Avenue exceeds the "unreasonable" standard identified so it would be considered a Minor Collector.

CHAPTER THREE – Errata / Text Changes to the DEIR

Revisions and clarifications to the Draft EIR made in response to comments and information received on the Draft EIR are indicated by strikethrough text (e.g., ~~strikethrough~~), indicating deletions, and underline text (e.g., underline), indicating additions.

These updates and revisions do not constitute significant new information requiring recirculation of the Draft EIR because they do not disclose that a new significant environmental impact would result from the Project or from a new mitigation measure proposed to be implemented; that a substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance; that a feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the Project proponent decline to adopt it; or that the Draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded (Guidelines Section 15088.5, subdivision (a)). Instead, the information merely clarifies or amplifies the information in the Draft EIR and does not result in any change in impact conclusion.

Text Changes to the Draft EIR:

Chapter 2 – Project Description

Page 2-6

The proposed Project consists of the annexation of 75.3 acres into the City of Selma. A horizontal mixed-use residential and commercial development project is proposed on the northern 39.1 acres of the annexation area (see Figure 2-2). The annexation is required for the proposed Project to utilize City utilities. No development is proposed for the remaining 36.2 acres, which is currently identified as Medium Density Residential within the City's General Plan. A total of 600 apartment units are planned for the Project and approximately 40,000 square feet of retail and food service uses, and a 100-key hotel are anticipated in the commercial area.

Initial Study – Environmental Checklist

Page 33

Less than Significant Impact. The Project area and immediate vicinity consist of land developed with commercial businesses and agriculture. Existing development has altered the natural landscape by introducing non-native plant species and removing potentially suitable natural habitat for sensitive plant or animal species within the Project area. The vegetation found within and along the Project area consists of nonnative species that provide little or no biological importance and value.

~~The City of Selma General Plan, Open Space, Conservation and Recreation Element was examined to determine if any species were listed or identified as a candidate, sensitive, or special status species located in or near the Proposed Project Area. One of the Open Space, Conservation and Recreation Element's goals is to protect any rare or endangered plant or animal species found in the Selma area. No species are listed. Due to the highly disturbed nature of the Project site, no sensitive or special status species are expected to be found in the Project vicinity and the impact would be ***less than significant***.~~

Swainson's hawk (SWHA) have been documented to occur near the proposed Project site and are known to travel up to 18 miles to forage and are also attracted to ground disturbing activities such as disking because these activities make prey vulnerable by reducing cover. The habitat types present at and surrounding the Project site all provide suitable foraging habitat for SWHA and any power poles or trees in the Project vicinity may be utilized for perching and/or nesting. Implementation of Mitigation measures BIO-1 through BIO-4 would reduce potential impacts to SWHA to ***less than significant***.

The Project is within the known geographic range of western burrowing owl (BUOW), and, based on aerial imagery, suitable BUOW habitat may be present on-site. Implementation of Mitigation measures BIO-5 through BIO-7 would reduce potential impacts to BUOW to ***less than significant.***

Lastly, the proposed Project site is within the range of Crotch's bumble bee (CBB). CBB are known to inhabit areas of grasslands and scrub that contain requisite habitat elements for nesting, such as small mammal burrows and bunch/thatched grasses, and these habitat elements may be present within the Project site. As such, implementation of Mitigation measures BIO-8 through BIO-11 would reduce potential impacts to CBB to ***less than significant.***

Mitigation Measures: ~~None are required.~~

BIO-1 A qualified biologist shall conduct surveys for nesting SWHA following the survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) immediately prior to construction.

BIO-2 If Project-specific ground disturbance activities will take place during the SWHA nesting season (i.e., March 1 through September 15), and active SWHA nests are present, a minimum ½-mile no-disturbance buffer shall be delineated and maintained around each nest, regardless of whether it was detected by surveys or observed incidentally. These buffers shall remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival, to prevent nest abandonment and other take of SWHA as a result of Project activities.

BIO-3 In the event an active SWHA nest is detected, and a ½-mile no-disturbance buffer is not feasible, consultation with CDFW shall occur to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) shall be obtained to comply with the California Endangered Species Act.

BIO-4 Compensation for the loss of SWHA foraging habitat as described in CDFW's "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks" (CDFG 1994) shall be implemented. The Staff Report recommends that mitigation for habitat loss occur within a minimum distance of 10 miles from known nest sites. For projects within 1 mile of an active nest tree, a minimum of 1 acre of habitat management (HM) land for each acre of development shall be provided. For projects within 5 miles of an active nest but greater than 1 mile, a minimum of ¾ acre of HM land for each acre of development shall be provided. For projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree, a minimum of ½ acre of HM land for each acre of development shall be provided.

BIO-5 Focused pre-construction surveys, following the 2012 Staff Report on Burrowing Owl Mitigation (2012 Staff Report) (CDFG 2012), shall be conducted immediately prior to construction. Please note that the 2012 Staff Report necessitates multiple surveys prior to the initiation of construction.

BIO-6 Should a BUOW or known BUOW den (active or inactive) be detected, either during preconstruction surveys or construction activities, a no-disturbance buffers, as outlined in the 2012 Staff Report on Burrowing Owl Mitigation (CDFG 2012), shall be implemented prior to and during any ground-disturbing activities. These buffers shall be implemented for both wintering and breeding BUOW.

BIO-7 If a BUOW or known BUOW den (active or inactive) is detected, and the no-disturbance buffers outlined in the 2012 Staff Report on Burrowing Mitigation are not feasible, consultation with CDFW shall occur to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) shall be obtained to comply with the California Endangered Species Act.

BIO-8 A qualified biologist shall conduct a habitat assessment to determine if the Project site and the immediate surrounding vicinity contain habitat suitable to support CBB. Potential nesting sites, which include all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs shall be documented as part of the assessment.

BIO-9 If potentially suitable habitat is identified, a qualified biologist shall conduct focused surveys for CBB, and their requisite habitat features following the methodology outlined in the Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023).

BIO-10 If CBB is detected, then all small mammal burrows and thatched/bunch grasses shall be avoided by a minimum of 50 feet to avoid take. If ground-disturbing activities will occur during the overwintering period (October through February), consultation with CDFW shall occur to discuss how to implement Project activities and avoid take. Any detection of CBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take.

BIO-11 If take cannot be avoided, a ITP pursuant to Fish and Game Code Section 2081(b), shall be obtained prior to initiating ground-disturbing activities.

BIO-~~1~~12 To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February 1st through ~~August~~ September 15th. If it is not possible to schedule construction between September and January, prior to the issuance of grading or building permits, a preconstruction survey for nesting birds

including western burrowing owl, shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A preconstruction survey shall be conducted no more than ~~14~~ 10 days prior to the initiation of construction activities. If construction is phased, a survey of phase of the Project shall be surveyed. A survey shall be required prior to the start of construction of each phase of the Project.

During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact area for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall establish a 250-foot buffer around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. ~~determine the extent of a construction-free buffer to be established around the nest.~~ If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.

Chapter 2.2 – Project Description

Page 2-6

The proposed Project consists of the annexation of 75.3 acres into the City of Selma. A horizontal mixed-use residential and commercial development project is proposed on the northern 39.1 acres of the annexation area (see Figure 2-2). No development is proposed for the remaining 36.2 acres, which is currently identified as Medium Density Residential within the City's General Plan. and any development that does occur will be subject to environmental review in accordance with CEQA. A total of 600 apartment units are planned for the Project and approximately 40,000 square feet of retail and food service uses, and a 100-key hotel are anticipated in the commercial area.

Appendix B – Air Quality, Health Risk, Greenhouse Gas, and Energy Technical Memorandum

Table 6

Emission Source Type	Relevant Assumptions
On-site Truck Traffic and On-site Truck Idling	● Configuration: Four (4) line volume sources ● Release height: 10.2 feet (3.1 meters) ● Vehicle Speed for On-site Travel: 5 mph ● Vehicle types: light-heavy duty 1 (LHD1), light-heavy duty 2 (LHD2), medium-heavy duty, and heavy-heavy duty (HHD) trucks ● Emission factors: EMFAC2021 ● Daily Heavy Trucks per day: ~~557~~ 610.5 average daily trips ● Daily Diesel Truck Trips per day: ~~383.9~~ 416.2 average daily trips ● Number of diesel truck idling instances per day: ~~383.9~~ 416.2 (based on one occurrence of idling per truck trip and idling emissions calculated for diesel truck trucks only)
Off-site Truck Traffic	● Configuration: Five (5) line volume sources ● The travel routes were used to represent off-site emissions in the immediate project vicinity (truck travel paths within approximately 1,000 feet of the project boundary until the freeway is reached) ● Vehicle speeds: aggregated emission factors for 5 MPH to 25 MPH speed bins ● Vehicle type: light-heavy duty 1 (LHD1), light-heavy duty 2 (LHD2), medium-heavy duty, and heavy-heavy duty (HHD) trucks ● Emission factors: EMFAC2021
Facility Operations	● 365 days per year, 24 hours per day
Source: Attachment B.	

Chapter 3.7 – Transportation/Traffic

Page 3.7-27

- Alternative 2 – Roundabout
  - Install a roundabout with two lanes on the east and west legs and a single lane on the south leg.
  - As queuing from the intersection of Walmart Main Driveway at Floral Avenue is projected to back into this intersection, a roundabout west of the Walmart entrance will not function properly at this location. Therefore, this alternative has been

determined to not be viable and has been omitted from the LOS table and conclusion as a result.

Page 3.7-30

Future North-South Road / Floral Avenue

- ~~Alternative 1 –~~ Traffic Signal
  - Modify the eastbound through-right lane to a through lane;
  - Add an eastbound through lane with a receiving lane east of Future North-South Road;
  - Add an eastbound right-turn lane; and
  - Add a westbound through with a receiving lane west of Future North-South Road.
  - Signalize the intersection with permissive phasing in the east-west directin and protected left-turn phasing in the north-south direction.
- ~~Alternative 2 – Roundabout~~
  - ~~Install a roundabout with two lanes on the east and west legs and a single lane on the south.~~

Page 3.7-31

Additionally, it is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis. Lastly, the Project will contribute its equitable fair share as listed in Table 3.7-9 for the future improvements necessary to maintain an acceptable LOS. Based on the list and recommendations listed above, mitigation measure TRA-1 shall be implemented to reduce potential impacts to a ***less than significant level.***

Compliance with Active Transportation Plan

The Selma *Active Transportation Plan* (ATP), approved in April 2018, outlines the City's vision for active transportation in which a complete, safe and comfortable network of trails, sidewalks and bikeways serve all who live and work in Selma. The *ATP* aims to a) create a network that connects residents to key destinations, b) create user-friendly facilities to promote walking and bicycling and c) increase safety by improving crosswalks and sidewalks in Selma.

In order to achieve these goals for active transportation, the *ATP* proposes a comprehensive network of citywide bikeways, trails and sidewalks. The recommended network would add 5.3 miles of Class I Bike Paths, 39.8 miles of Class II Bike Lanes, 8.9 miles of Class III Bike Routes, 0.9 miles of Class IV Separated Bikeways and 6.1 miles of sidewalks. This ATP also makes

recommendations for cross sections of a proposed trail along the east side of the City, roadway crossing improvements and bicycle parking. This network will be constructed in conjunction with adjacent land developments, roadway maintenance, capacity enhancement and active transportation infrastructure projects using funds from different local, state and federal sources.

Bikeways

The Selma *ATP* classifies bicycle facilities into the following types:

- Class I Bikeway (Bike Path) – Provides a completely separated right-of-way for exclusive use of bicycles and pedestrians with crossflow minimized.
- Class II Bikeway (Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway.
- Class III Bikeway (Bike Route) – Provides a shared use with pedestrians or motor vehicle traffic, typically on lower volume roadways.
- Class IV Bikeways (Separated Bikeways) – Provides a protected lane for one-way bike travel (one-way cycle track) and protected lanes for two-way bike travel (two-way cycle track) on a street or highway.

Currently, Class II Bikeways currently exist adjacent to and in the vicinity of the Project site. Adjacent to the Project site, Class II Bikeways exist along Floral Avenue. In the vicinity of the Project site, Class II Bikeways exist along portions of Floral Avenue and Highland Avenue. Currently, bicycle travel through the State Route 99 at Floral Avenue interchange and along State Route 43 have been categorized as high stress.

The *Selma ATP* recommends that Class II Bikeways be implemented adjacent to and in the vicinity of the Project site. Adjacent to the Project site, Class II Bikeways are planned along Floral Avenue. In the vicinity of the Project site, Class II Bikeways are planned along remaining portions of Floral Avenue, Highland Avenue and Golden State Boulevard. In the vicinity of the Project site, Class I Bikeways are planned along portions of Golden State Boulevard. In the vicinity of the Project site, Class III Bikeways are planned along portions of Rose Avenue. Therefore, it is recommended that the Project retain the Class II Bikeway along its frontage to Floral Avenue, consistent with the *Selma ATP*, and that a Class II Bikeway be implemented along the Project's frontage to the Future North-South Road. Furthermore, it is recommended that the City of Selma and Caltrans collaborate on a future analysis of bicycle facilities through the State Route 99 at Floral Avenue interchange and seek funding sources for the reconstruction of this interchange to promote alternate modes of transportation.

Walkways

The *Selma ATP* classifies pedestrian facilities as either sidewalk or Class I Bike Paths, which allow for exclusive use of bicyclists and pedestrians. Currently, pedestrian sidewalks exist in the vicinity of the Project site. In the vicinity of the Project, pedestrian sidewalks exist along portions of Floral Avenue, Highland Avenue, Stillman Street and Rose Avenue. Currently, sidewalks provide a direct connection to three (3) bus routes that have stops within 0.5 miles of the Project. These stops and routes are described in further detail in the Transit section of this Report.

The *Selma ATP* recommends that pedestrian sidewalks and Class I Bike Paths be implemented adjacent to and in the vicinity of the Project site. Therefore, it is recommended that the project construct ADA compliant pedestrian sidewalks along all internal streets connecting all uses to external sidewalks and along the Project's frontage to Floral Avenue, Future North-South Road and Stillman Street. These sidewalks have been incorporated into the Site plan and Project design (see Figure 2-3). Furthermore, it is recommended that the City of Selma and Caltrans collaborate on a future analysis of pedestrian facilities through the State Route 99 at Floral Avenue interchange and seek funding sources for the reconstruction of this interchange to promote alternate modes of transportation.

Transit

The Selma Transit Division operates under MV Transportation, Monday through Friday from 7:00 AM to 5:30 PM. The Selma Transit Division operates five (5) compressed natural gas vehicles. The natural gas vans operate on an "on call basis" and will pick up and drop off at the requested destination within the City's SOI. One (1) vehicle operates on Saturdays from 8:00 AM to 5:00 PM.

Fresno County Rural Transit Agency (FCRTA) is the transit operator in the County of Fresno. At present, there are two (2) Transit Routes that serve the City of Selma. These include Kingsburg-Reedley Inter-City Transit and Southeast Inter-City Transit. Kingsburg-Reedley Transit runs in the vicinity of the proposed Project via Whitson Street. This route provides a direct connection to the cities of Kingsburg, Selma, Fowler, Parlier and Reedley. The closest stop is located approximately 0.5 miles east of the proposed Project near the Selma Plaza Shopping Center. Southeast Transit runs in the vicinity of the proposed Project via Whitson Street. This Route provides a direct connection to the cities of Kingsburg, Selma, Fowler and Fresno. The closest stop is located approximately 0.5 miles east of the proposed Project near the Selma Plaza Shopping Center.

Kings Area Rural Transit (KART) is the transit operator in the County of Kings. KART Route 17 runs in the vicinity of the proposed Project via Highland Avenue. The closest stop is located near Selma Kaiser Hospital, approximately 0.2 miles east of the proposed Project. This Route provides a direct connection to Valley Children's Hospital, Fresno Kaiser Hospital, Fresno Veterans Hospital, Community Regional Center, Fresno Fulton Mall and Selma Kaiser Hospital.

Retention of the existing and expansion of future transit routes is dependent on transit ridership demand and available funding.

Safe Routes To School

Kindergarten through 12th grade students from the Project will be served by the Selma Unified School District (SUSD). The SUSD provides transportation for students who live in excess of an established radius zone. The zone is a radius of 1.0 mile for Kindergarten through 6th grade and 2.5 miles for 7th through 12th grade.

Based on attendance boundaries at the time of the preparation of this TIA, elementary school students would attend Eric White Elementary School located on the northeast quadrant of the intersection of Highland Avenue at Nebraska Avenue. Eric White Elementary School is located 0.65 and 0.95 from the nearest and farthest residential unit on the Project, respectively. Therefore, it is anticipated that elementary school students will need to walk, bike or be driven between the Project and school.

The most direct path from the Project to the Eric White Elementary School campus can begin at the northwest quadrant of Highland Avenue at Stillman Street. Students would proceed to travel east on the north side of Stillman Street until reaching the northwest corner of Highland Avenue at Stillman Street.

This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the north and east legs or the west and south legs to reach the southeast corner of Highland Avenue at Stillman Street. Students would proceed to travel south on the east side of Highland Avenue until reaching the intersection of Highland Avenue at Rose Avenue. This intersection is controlled by a two-way stop on Rose Avenue that contains no marked crosswalks. Students would cross the east leg to reach the southeast corner of Highland Avenue at Rose Avenue. Students would proceed east on the south side of Rose Avenue until reaching the intersection of Mitchell Avenue at Rose Avenue. This intersection is controlled by a one-way stop on Mitchell Avenue that contains a marked crosswalk on the east leg. Students would proceed to travel south of the west side of Mitchell Avenue until reaching the northwest corner

of Mitchell Avenue at Fig Street. This intersection is controlled by a one-way stop on Fig Street that contains a marked crosswalk on the west and north legs. Students would cross the west leg to reach the southwest corner of Mitchell Avenue at Fig Street. Students would proceed to travel west on the south side of Fig Street until reaching an entrance to the school campus.

Based on attendance boundaries at the time of the preparation of this EIR, middle school students would attend Abraham Lincoln Middle School located on the northeast quadrant of Orange Avenue at Floral Avenue. Abraham Lincoln Middle School is located 1.80 and 2.10 from the nearest and farthest residential unit on the Project, respectively. Therefore, it is anticipated that middle school students will need to walk, bike or be driven between the Project and school.

The most direct path from the Project to the Abraham Lincoln Middle School campus can begin at the southwest quadrant of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed east on the south side of Floral Avenue until reaching the southwest corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would cross the west and north legs to reach the northeast corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Highland Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east and south legs. Students would cross the north leg to reach the northeast corner of Highland Avenue at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Whitson Street at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the north leg to reach the northeast corner of Whitson Street at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue crossing the Union Pacific Railroad until reaching the intersection of Thompson Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would cross the west and south legs to reach the southeast corner of Thompson Avenue at Floral Avenue. Students would proceed to travel east on the south side of Floral Avenue until reaching the intersection of Wright Street at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the south leg to reach the southeast corner of Wright Street at Floral Avenue. Students would proceed east on the south side of Floral Avenue until reaching the intersection of McCall Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the south legs to reach the southeast corner of McCall Avenue at Floral Avenue. Students would proceed to travel east on the south side of Floral Avenue until reaching the intersection of Orange Avenue at Floral Avenue. This

intersection is controlled by an all-way stop that contains marked crosswalks on all legs. Students would cross the west and north or the south and east legs to reach the northeast corner of Orange Avenue at Floral Avenue. Students would proceed to travel north on the east side of Orange Avenue until reaching an entrance to the school campus.

Based on attendance boundaries at the time of the preparation of this EIR, high school students would attend Selma High School is located 0.90 and 1.20 from the nearest and farthest residential unit on the Project, respectively. Therefore, it is anticipated that high school students will need to walk, bike or be driven between the Project and school.

The most direct path from the Project to the Selma High School campus can begin at the southwest quadrant of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed east on the south side of Floral Avenue until reaching the southwest corner of the State Route 99 Southbound Off- Ramp at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would cross the west and north legs to reach the northeast corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Highland Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east and south legs. Students would cross the north leg to reach the northeast corner of Highland Avenue at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Whitson Street at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the north leg to reach the northeast corner of Whitson Street at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue crossing the Union Pacific Railroad until reaching the intersection of Thompson Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would proceed to travel north of the west side of Thompson Avenue until reaching the intersection of Highland Avenue at Lewis Street. This intersection is controlled by a one-way stop on Lewis Street that contains marked crosswalks on the west and south legs. Students would cross the south leg to reach the southeast corner of Thompson Avenue at Lewis Street. Students would proceed to travel north on the east side of Thompson Avenue until reaching an entrance to the school campus.

Stretches of Floral Avenue, Highland Avenue and Thompson Avenue that will be utilized by students to reach school campuses do not contain sidewalks. Also, the intersections of Highland Avenue at Rose Avenue and various intersections along Floral Avenue do not contain marked crosswalks. It is recommended that the Project and Selma Unified School district look into

funding sources to enhance the walkways for elementary, middle and high school students to and from school campuses.

Implementation of Mitigation Measure TRA-2, TRA-3 and TRA-4 will ensure that the proposed Project will be compliant with the City's Active Transportation Plan and reduce impacts to ***less than significant.***

Mitigation Measures:

TRA-1 The Project shall be responsible for paying its fair share cost percentages and/or constructing the recommended improvements identified in the mitigation measures discussion, subject to reimbursement for the costs that are in excess of the Project's equitable responsibility as determined by the City. This shall be itemized and enforced through conditions of approval or a development agreement, at the discretion of the City, prior to Project implementation.

TRA-2 The Project shall implement all VMT mitigation measures identified in Table 3.17-5 which have already been included in the Project design. These improvements shall be itemized and enforced through conditions of approval or a development agreement, at the discretion of the City, prior to Project implementation.

TRA-3 The Project shall implement ADA compliant pedestrian sidewalks along all internal streets connecting all uses to external sidewalks and along the Project's frontage to Floral Avenue, Future North-South Road and Stillman Street.

TRA-4 The Project shall retain the Class II Bikeway along its frontage to Floral Avenue, consistent with the Selma ATP. A Class II Bikeway shall also be implemented along the Project's remaining frontage roads.

CHAPTER FOUR – Mitigation Monitoring and Reporting Program

State law requires that a public agency adopt a monitoring program for mitigation measures that have been incorporated into the approved project to reduce or avoid significant effects on the environment. The purpose of the monitoring program is to ensure compliance with environmental mitigation during project implementation and operation. Since there are potentially significant impacts requiring mitigation associated with the project, a Mitigation Monitoring Program is included herein on the following pages.

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
Aesthetics				
AES-1 The Project Applicant shall incorporate site-specific consideration of the orientation of the building, use of landscaping materials, lighting design, and choice of primary façade materials to minimize potential off-site spillover of lighting and glare from new development. As part of this measure and prior to project approval, the City shall require the incorporation of site- and project-specific design considerations (to be included in the lighting plans) to minimize light and glare, including, but not limited to, the following: • New outdoor lighting adjacent to residential or other sensitive uses shall utilize directional lighting methods with full cutoff type light fixtures (and shielding as applicable) to minimize glare and light spillover. • All elevated light fixtures such as in parking lots and street lighting shall be shielded to reduce glare. • All lighting shall be consistent with the Illuminating Engineering Society of North America (IESNA) Lighting Handbook.	Project Applicant	Prior to issuance of grading or building permits	City of Selma	

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
• City staff shall review all exterior lighting designs for conformance with applicable standards. Verification of inclusion in project design shall be provided at the time of design review and lighting plans shall be reviewed and approved prior to project-specific design and construction document approval.				
Air Quality				
AIR-1: Prior to issuance of building permits, the Project applicant shall prepare and submit building plans to the City of Selma that demonstrate that all new structures have outdoor electrical outlets that are accessible to maintenance workers and landscapers to allow the use of electric-powered equipment.	Project Applicant	Prior to issuance of building permits	City of Selma	
AIR-2: The use of zero-VOC shall be encouraged in prior to the issuance of the certificate of occupancy for each building associated with the proposed Project, the Project applicant shall provide the Ci ty of Selma with documentation listing the consumer products to be used during operation of the proposed Project. The	Project Applicant	During construction and operation	City of Selma	

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
consumer products purchased by the building occupant(s) or by the cleaning business contracted by the building occupant(s) for on-site use and listed in the documentation provided to the City shall consist of water-based or "zero-[volatile organic compound [VOC]" consumer. "Consumer products," as referred to in this mitigation measure, shall include detergents, cleaning compounds, polishes, and floor finishes. "Consumer products," as referred to in this mitigation measure, shall not include parking lot degreasers, architectural coatings, pesticides, or fertilizers. To monitor and ensure that the use of zero-VOC consumer products are being encouraged to be used on-site, the building operator(s) shall maintain records for the duration of Project operation of all efforts to comply with this mitigation measure. These records shall be made available to the City of Selma upon request. Alternatively, the City may require periodic reporting and provision of written records by operators and conduct regular inspections of the records to the maximum extent feasible and practicable.				
AIR-3: Tenants and building owners for the non-residential components of the Project shall be encouraged to use low-volatile organic compound (VOC) Architectural	Project Applicant	During operation	City of Selma	

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
Coatings with an average VOC content of 10 grams per liter (g/l) or less for repainting buildings during the operational period. The Project applicant shall provide information on paints with low VOC content to all tenants and building owners within the first year of Project occupancy.				
AIR-4: Prior to issuance of a building permit for the first non-residential building associated with the Project, the applicant shall retain a qualified transportation consultant to prepare and submit a Transportation Demand Management (TDM) program to the City of Selma for review and approval. The TDM program shall identify measures to reduce daily gasoline-powered and diesel-powered vehicle trips to the Project site, with a minimum 5 percent reduction in gasoline-fueled and diesel-fueled trips. The approved TDM program shall be implemented in conjunction with the start of operations of the Project. Examples of trip reduction measures may include, but are not limited to, the following: ▪ Post transit information (maps, schedules, fares, etc.) in public areas of the Project that is accessible to employees, patrons, and other Project occupants;	Project Applicant	Prior to issuance of a building permit for the first non-residential building	City of Selma	

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
▪ Provide employer-subsidized transit passes; ▪ Sponsor an employee ride sharing program; ▪ Provide employee lockers for personal items; ▪ In non-residential uses, provide employees with an employee only restroom with a shower; ▪ Provide secure indoor bicycle parking (racks or lockers) for employees and/or residents; ▪ Provide customer or visitor bicycle parking (racks) in safe and convenient locations; ▪ For non-residential components of the Project, allow flex scheduling or compressed scheduling practices; ▪ Provide preferential parking spaces for clean air vehicles;				

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
▪ Provide charging stations for electric vehicles; and ▪ If home delivery services are provided by any of the non-residential components of the Project, the home delivery services shall be performed using low-emission or alternative-fueled (electric, natural gas, hydrogen, etc.) vehicles.				
Biological Resources				
BIO-1: Protect Swainson's hawk A qualified biologist shall conduct surveys for nesting SWHA following the survey methodology developed by the SWHA Technical Advisory Committee (SWHA TAC 2000) immediately prior to construction.	Project Applicant	Prior to construction activities	City of Selma and CDFW	
BIO-2: Protect Swainson's hawk If Project-specific ground disturbance activities will take place during the SWHA nesting season	Project Applicant	Prior to construction activities	City of Selma and CDFW	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
	(i.e., March 1 through September 15), and active SWHA nests are present, a minimum ½-mile no-disturbance buffer shall be delineated and maintained around each nest, regardless of whether it was detected by surveys or observed incidentally. These buffers shall remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival, to prevent nest abandonment and other take of SWHA as a result of Project activities.				
BIO-3:	**Protect Swainson's hawk** In the event an active SWHA nest is detected, and a ½-mile no-disturbance buffer is not feasible, consultation with CDFW shall occur to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) shall be obtained to comply with the California Endangered Species Act.	Project Applicant	Prior to construction activities	City of Selma and CDFW	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
BIO-4:	**Protect Swainson's hawk** Compensation for the loss of SWHA foraging habitat as described in CDFW's "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks" (CDFG 1994) shall be implemented. The Staff Report recommends that mitigation for habitat loss occur within a minimum distance of 10 miles from known nest sites. For projects within 1 mile of an active nest tree, a minimum of 1 acre of habitat management (HM) land for each acre of development shall be provided. For projects within 5 miles of an active nest but greater than 1 mile, a minimum of ¾ acre of HM land for each acre of development shall be provided. For projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree, a minimum of ½ acre of HM land for each acre of development shall be provided.	Project Applicant	Prior to construction activities	City of Selma and CDFW	
BIO-5:	**Protect Burrowing Owl** Focused pre-construction surveys, following the 2012 Staff Report on Burrowing Owl Mitigation (2012 Staff Report) (CDFG 2012), shall be conducted immediately prior to construction.	Project Applicant	Prior to construction activities	City of Selma and CDFW	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
	Please note that the 2012 Staff Report necessitates multiple surveys prior to the initiation of construction.				
BIO-6	**Protect Burrowing Owl** Should a BUOW or known BUOW den (active or inactive) be detected, either during preconstruction surveys or construction activities, a no-disturbance buffers, as outlined in the 2012 Staff Report on Burrowing Owl Mitigation (CDFG 2012), shall be implemented prior to and during any ground-disturbing activities. These buffers shall be implemented for both wintering and breeding BUOW.	Project Applicant	Prior to and during construction activities	City of Selma and CDFW	
BIO-7	**Protect Burrowing Owl** If a BUOW or known BUOW den (active or inactive) is detected, and the no-disturbance buffers outlined in the 2012 Staff Report on Burrowing Mitigation are not feasible, consultation with CDFW shall occur to discuss how to implement the Project and avoid take. If take cannot be avoided, take authorization through the	Project Applicant	Prior to construction activities	City of Selma and CDFW	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
	acquisition of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b) shall be obtained to comply with the California Endangered Species Act.				
BIO-8	**Protect Crotch's bumble bee** A qualified biologist shall conduct a habitat assessment to determine if the Project site and the immediate surrounding vicinity contain habitat suitable to support CBB. Potential nesting sites, which include all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs shall be documented as part of the assessment.	Project Applicant	Prior to and during construction	City of Selma	
BIO 9	**Protect Crotch's bumble bee** If potentially suitable habitat is identified, a qualified biologist shall conduct focused surveys for CBB, and their requisite habitat features following the methodology outlined in the Survey	Project Applicant	Prior to issuance of any grading permit and ongoing during construction	City of Selma	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
	Considerations for California Endangered Species Act Candidate Bumble Bee Species (CDFW 2023).				
BIO 10	**Protect Crotch's bumble bee** If CBB is detected, then all small mammal burrows and thatched/bunch grasses shall be avoided by a minimum of 50 feet to avoid take. If ground-disturbing activities will occur during the overwintering period (October through February), consultation with CDFW shall occur to discuss how to implement Project activities and avoid take. Any detection of CBB prior to or during Project implementation warrants consultation with CDFW to discuss how to avoid take.				
BIO 11	**Protect Crotch's bumble bee** If take cannot be avoided, an ITP pursuant to Fish and Game Code Section 2081(b), shall be obtained prior to initiating ground-disturbing activities.	Project Applicant	Prior to ground-disturbing activities	City of Selma	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
BIO 12	**Protect Nesting Birds** To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February 1st through September 15th. If it is not possible to schedule construction between September and January, prior to the issuance of grading or building permits, a preconstruction survey for nesting birds including western burrowing owl, shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A preconstruction survey shall be conducted no more than 10 days prior to the initiation of construction activities. If construction is phased, a survey of phase of the Project shall be surveyed. A survey shall be required prior to the start of construction of each phase of the Project. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact area for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall establish a 250-foot buffer around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors.	Project Applicant	Prior to construction activities	City of Selma and CDFW	

	Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
	determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.				
Hazards and Hazardous Materials					
HAZ-1	Soil sampling, per California Department of Toxic Substances Control (DTSC) Interim Guidance for Sampling Agricultural properties (August 7, 2008)[1] shall be conducted to identify the amounts of OCPs in the soil. If present, OCPs requiring further analysis, per DTSC consultation, are dichloro-diphenyl-trichloroethane, toxaphene, and dieldrin. Should these OCPs be present, soil remediation shall be conducted until levels are reduced per DTSC guidelines prior to issuance of grading permits. Additionally, if any level of arsenic is present, further analysis and sampling	Project Applicant	Prior to issuance of grading or building permits	City of Selma	

[1] California Department of Toxic Substances Control. Interim Guidance for Sampling Agricultural Properties (Third Revision). August 7, 2008. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://dtsc.ca.gov/wp-content/uploads/sites/31/2018/09/Ag-Guidance-Rev-3-August-7-2008-2.pdf. Accessed August 2024.

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
shall meet Human Health Risk Assessment NOTE NUMBER 3, DTSC-SLs approved thresholds.[2] If arsenic levels do not meet the approved thresholds, remedial action shall take place to reduce levels below thresholds prior to issuance of grading permits.				
Noise				
NOI - 1: A 10-foot sound wall shall be constructed along the Project site's eastern property line, adjacent to the existing truck access route and loading docks at the rear of the existing retail/commercial land uses, as detailed in Figure 5 of the Initial Study.	Project Applicant	Prior to issuance of residential permit of occupancy	City of Selma	
NOI - 2: Any truck movements occurring between 10:00 p.m. and 7:00 a.m. shall occur at setback distances of 200 feet or greater from any outdoor activity area of proposed residential land uses.	Project Applicant	During project operations	City of Selma	

[2] California Department of Toxic Substances Control. Human and Ecological Risk Office. June 2020, revised May 2022. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://dtsc.ca.gov/wp-content/uploads/sites/31/2022/02/HHRA-Note-3-June2020-Revised-May2022A.pdf. Accessed August 2024.

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
Transportation				
TRA-1: The Project shall be responsible for paying its fair share cost percentages and/or constructing the recommended improvements identified in the mitigation measures discussion, subject to reimbursement for the costs that are in excess of the Project's equitable responsibility as determined by the City. This shall be itemized and enforced through conditions of approval or a development agreement, at the discretion of the City, prior to Project implementation.	Project Applicant	Prior to issuance of building permits	City of Selma	
TRA-2: The Project shall implement all VMT mitigation measures identified in Table 3.17-5 which have already been included in the Project design. These improvements shall be itemized and enforced through conditions of approval or a development agreement, at the discretion of the City, prior to Project implementation.	Project Applicant	Prior to issuance of residential permit of occupancy	City of Selma	

Mitigation Measure	Party responsible for Implementing Mitigation	Timing	Party responsible for Monitoring	Verification (name/ date)
TRA-3: The Project shall implement ADA compliant pedestrian sidewalks along all internal streets connecting all uses to external sidewalks and along the Project's frontage to Floral Avenue, Future North-South Road and Stillman Street.	Project Applicant	Prior to issuance of residential permit of occupancy	City of Selma	
TRA-4: The Project shall retain the Class II Bikeway along its frontage to Floral Avenue, consistent with the Selma ATP. A Class II Bikeway shall also be implemented along the Project's remaining frontage roads.	Project Applicant	Prior to issuance of residential permit of occupancy	City of Selma	

Traffic Impact Analysis Report

Casitas Selma

Located on the Southwest Quadrant of Highland Avenue and Floral Avenue

In the City of Selma, California

Prepared for

Lance-Kashian & Company
265 East River Park Circle
Fresno, CA 93720

January 25, 2024

Project No. 001-009

Traffic Engineering, Transportation Planning, & Parking Solutions
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Traffic Engineering, Transportation Planning, & Parking Solutions

Traffic Impact Analysis Report

For the Casitas Selma located on the Southwest Quadrant of Highland Avenue and Floral Avenue

In the City of Selma, California

January 25, 2024

This Traffic Impact Analysis Report has been prepared under the direction of a licensed Traffic Engineer. The licensed Traffic Engineer attests to the technical information contained therein and has judged the qualifications of any technical specialists providing engineering data from which recommendations, conclusions and decisions are based.

Prepared by:



Jose Luis Benavides, PE, TE
President

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Introduction and Summary

Introduction

This Report describes a **Traffic Impact Analysis (TIA)** prepared **by JLB Traffic Engineering, Inc. (JLB)** for the **Casitas Selma (Project)** located in the City of Selma. Specifically, the Project proposes to develop approximately 36.5 net acres with a mix of residential, commercial and park space. Based on information provided to JLB, the Project is consistent with the City of Selma *General Plan Update 2035*. Figure 1 shows the location of the proposed Project site relative to the surrounding roadway network.

The purpose of the TIA is to evaluate the potential on-site and off-site traffic impacts, identify short-term and long-term roadway and circulation needs, determine potential roadway improvement measures and identify any critical traffic issues that should be addressed in the on-going planning process. The TIA primarily focused on evaluating traffic conditions at study intersections that may potentially be impacted by the proposed Project and a separate Vehicle Miles Traveled (VMT) Analysis. The Scope of Work was prepared via consultation with City of Selma, Fresno County and Caltrans staff.

Summary

The potential traffic impacts of the proposed Project were evaluated in accordance with the standards set forth by the Level of Service (LOS) policies of the City of Selma, Fresno County and Caltrans and the City of Selma policy on VMT.

Existing Traffic Conditions

- At present, the intersection of Highland Avenue at Rose Avenue exceeds its LOS threshold during the PM peak period. All other study intersections currently operate at an acceptable LOS during both peak periods. It is recommended that the addition of lanes and modification of traffic control mechanisms be implemented to improve the LOS at this intersection. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Existing plus Project Traffic Conditions

- At buildout and before any internal capture is considered, the Project is estimated to generate 10,786 daily trips, 784 AM peak hour trips and 889 PM peak hour trips at build-out.
- Due to the mix of land uses within the Project, it is anticipated that 1,555 daily trips, 98 AM peak hour trips and 322 PM peak hours trips will stay within the confines of the Project.
- At buildout and after internal capture, the Project is estimated to generate 9,231 daily trips, 686 AM peak hour trips and 567 PM peak hour trips.
- Compared to the analyzed project site plan, the Project is estimated to generate 77 less daily trips, 65 less AM peak hour trips and 7 more PM peak hour trips. Given that the PM peak is the only peak that is estimated to generate more traffic and that it only generates 7 more peak hour trips than originally analyzed. This miniscule increase in traffic during the PM peak is not projected to result in changes to the LOS, queuing or recommendations presented within this report. As such, it is JLB's opinion that this analysis effectively analyzes the latest Project site plan.

- JLB analyzed the location of the existing and proposed roadways and access points. After initial comments were addressed to internal circulation and driveway location, all access points are located at points that minimize traffic operational impacts to existing and future roadway networks in the latest site plan.
- It is recommended that the Project implement ADA compliant pedestrian sidewalks along all internal streets connecting all uses to external sidewalks and along the Project's frontage to Floral Avenue, Future North-South Road and Stillman Street.
- It is recommended that the Project retain the Class II Bikeway along its frontage to Floral Avenue, consistent with the *Selma ATP*. It is further recommended that a Class II Bikeway be implemented along the Project's frontage to the Future North-South Road.
- Under this scenario, the intersection of Highland Avenue at Rose Avenue is projected to exceed its LOS threshold during one or both peak periods. All other study intersections currently operate at an acceptable LOS during both peak periods. It is recommended that the addition of lanes and modification of traffic control mechanisms be implemented to improve the LOS at this intersection. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects under this scenario is 52,746 daily trips, 2,022 AM peak hour trips and 3,985 PM peak hour trips.
- Under this scenario, the intersections of Future North-South Road at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue exceed their LOS threshold during the PM peak period. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. It is recommended that the addition of lanes and modification of traffic control mechanisms be implemented to improve the LOS at these intersections. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Cumulative Year 2046 No Project Traffic Conditions

- Under this scenario, the intersections of Highland Avenue at Golden State Boulevard, DeWolf Avenue at Floral Avenue, SR 99 Southbound Off-Ramp at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during one or both peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. It is recommended that the addition of lanes and modification of traffic control mechanisms be implemented to improve the LOS at these intersections. Improvements are also recommended to the intersections of Walmart Main Driveway at Floral Avenue and SR 99 Northbound Off-Ramp at Floral Avenue in order to address queuing issues at these intersections. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Cumulative Year 2046 plus Project Traffic Conditions

- Under this scenario, the intersections of Highland Avenue at Golden State Boulevard, DeWolf Avenue at Floral Avenue, Future North-South Road at Floral Avenue, Walmart Main Driveway at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during one or both peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. It is recommended that the addition of lanes and modification of traffic control mechanisms be implemented to improve the LOS at these intersections. Improvements are also recommended to the intersection of SR 99 Southbound Off-Ramp at Floral Avenue in order to address queuing issues at this intersection. Additional details as to the recommended improvements for these intersections are presented later in this Report.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable fair share as listed in Table XV for the future improvements necessary to maintain an acceptable LOS.

Scope of Work

The TIA focuses on evaluating traffic conditions at study intersections and segments that may potentially be impacted by the proposed Project. On October 25, 2022, a Draft Scope of Work for the preparation of a TIA and VMT analysis for this Project was provided to City of Selma, Fresno County and Caltrans staff for their review and comment. The Draft Scope of Work was based on the Traffic Impact Analysis Guidelines of lead and responsible agencies.

On November 16, 2022, the County of Fresno replied to the Draft Scope of Work stating that they concur and have no comments. On November 21, 2022, the City of Selma replied to the Draft Scope of Work that they only request that a vicinity map be included to clarify the location of intersection 9. On December 19, 2022, the City of Selma followed up with additional comments on the near terms projects where they removed the Graham Commercial and Stillman Cinema Apartments while adding two mixed use projects. These mixed-use projects are located on the northeast and southwest corners of Highland Avenue and Nebraska Avenue. On December 2, 2022, Caltrans staff responded to the Draft Scope of Work stating that they had no comments.

Based on the comments received, this Report includes the near term mixed-use projects on the northeast and southwest corners of Highland Avenue and Nebraska Avenue. The Graham Commercial and Stillman Cinema Apartments have also been removed. The Draft Scope of Work and the comments received from the lead agency and responsible agencies are included in Appendix A.

Study Facilities

The existing intersection peak hour turning movement and segment volume counts were conducted at the study intersections in September and November of 2022, while schools in the vicinity of the Project site were in session. The intersection turning movement counts included pedestrian and bicycle volumes. The traffic counts for the existing study intersections are contained in Appendix B. The existing intersection turning movement volumes, intersection geometrics and traffic controls are illustrated in Figure 2.

Study Intersections

1. Golden State Boulevard / Highland Avenue
2. DeWolf Avenue / Floral Avenue
3. Future North-South Road / Floral Avenue (Future)
4. Walmart Main Driveway / Floral Avenue
5. Eastern Driveway / Floral Avenue
6. State Route 99 Southbound Off Ramp / Floral Avenue
7. Highland Avenue (State Route 43) / Floral Avenue
8. State Route 99 Northbound Off Ramp / Floral Avenue
9. Whitson Street / Floral Avenue
10. Highland Avenue (State Route 43) / State Route 99 Southbound Ramps
11. Southern Main Access / Stillman Street (Future)
12. Highland Avenue (State Route 43) / Stillman Street
13. Highland Avenue (State Route 43) / Rose Avenue

Project Only Trips to State Facilities

1. State Route 99 / Floral Avenue-Highland Avenue Interchange

Study Scenarios

Existing Traffic Conditions

This scenario evaluates the Existing Traffic Conditions based on existing traffic volumes and roadway conditions from traffic counts and field surveys conducted in September and November 2022.

Existing plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Existing plus Project Traffic Conditions. The Existing plus Project traffic volumes were obtained by adjusting the Existing Traffic Conditions traffic volumes to account for the additional roads constructed with the Project and adding the Project Only Trips. The Project will construct a north-south road on its western boundary between Floral Avenue and Stillman Street as well as an internal north-south road between Floral Avenue and Stillman Street. The modifications to Existing Traffic Conditions traffic volumes were developed based on the Fresno Council of Governments (Fresno COG), engineering judgment, existing residential densities and the City of Selma *General Plan Update 2035* Circulation Element in the vicinity of the Project site. The Project Only Trips to the study facilities were developed based on existing travel patterns, the Fresno Council of Governments (Fresno COG) Project Select Zones, the existing roadway network, data provided by the developer, knowledge of the study area, engineering judgment, existing residential densities and the City of Selma *General Plan Update 2035* Circulation Element in the vicinity of the Project site.

Near Term plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Near Term plus Project Traffic Conditions. The Near Term plus Project traffic volumes were obtained by adding the Near Term related trips to the Existing plus Project Traffic Conditions scenario.

Cumulative Year 2046 No Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2046 No Project Traffic Conditions. The Cumulative Year 2046 No Project traffic volumes were obtained by subtracting the Project Only Trips from the Cumulative Year 2046 plus Project Traffic Conditions scenario.

Cumulative Year 2046 plus Project Traffic Conditions

This scenario evaluates total traffic volumes and roadway conditions based on the Cumulative Year 2046 Plus Project Traffic Conditions. The Cumulative Year 2046 Plus Project traffic volumes were obtained by using a combination of the Fresno COG activity-based model (ABM) (Base Year 2019 and Cumulative Year 2046) and existing traffic counts. Under this scenario, the increment method, as recommended by the Model Steering Committee was utilized to determine the Cumulative Year 2046 traffic volumes. The Fresno COG ABM results were provided by Kittelson & Associates and plots are contained in Appendix C.

LOS Methodology

LOS is a qualitative index of the performance of an element of the transportation system. LOS is a rating scale running from "A" to "F", with "A" indicating no congestion of any kind and "F" indicating unacceptable congestion and delays. LOS in this study describes the operating conditions for signalized and unsignalized intersections.

The *Highway Capacity Manual* (HCM) 6th Edition is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. U-turn movements were analyzed using HCM 2000 methodologies and would yield more accurate results for the reason that HCM 6th Edition methodologies do not allow the analysis of U-turns. Lane configurations not reflective of existing conditions are a result of software limitations and thus represent a worst-case scenario. Synchro software was used to define LOS in this study. Details regarding these calculations are included in Appendix D.

While LOS is no longer the criteria of significance for traffic impacts in the state of California, the City of Selma continues to apply congestion-related conditions or requirements for land development projects through planning approval processes outside of CEQA guidelines in order to continue the implementation of *Selma General Plan* policies.

LOS Thresholds

The City of Selma *General Plan Update 2035* has established LOS D as the acceptable level of traffic congestion on intersections and road segments for minor collectors, major collectors, minor arterials, major arterials and highways within the City of Selma. Where other jurisdictions control and manage roadways, their respective level of service standards shall prevail on applicable segments. In order to avoid using local streets for excessive through traffic, the LOS B threshold was established for local streets. Therefore, the City of Selma LOS D threshold is used to evaluate the potential significance of LOS impacts to study facilities within the City of Selma SOI.

The *Fresno County General Plan* has established LOS C as the acceptable level of traffic congestion on all county roads and streets that fall entirely outside the Sphere of Influence (SOI) of Selma. (Fresno County, 2000). For those areas that fall within the SOI of a City, the LOS threshold of the city is used in this Report. LOS C is used to evaluate the potential LOS impacts to Fresno County intersections and segments that fall outside the City of Selma SOI. In this case, all study facilities fall within the City of Selma SOI, therefore, the City of Selma LOS is utilized.

Caltrans no longer considers delay as a significant impact to the environment, for land use projects and plans. According to the Caltrans document VMT Focused Transportation Impact Study Guidelines dated May 2020, Caltrans review of land use projects and plans is focused on a VMT metric consistent with CEQA. In this TIA, however, study intersections that fall within Caltrans SOI utilize the LOS threshold described in their respective Transportation Concept Reports.

Operational Analysis Assumptions and Defaults

The following operational analysis values, assumptions and defaults were used in this study to ensure a consistent analysis of LOS among the various scenarios.

- The Caltrans timing plan for State Routes (SR) were utilized in setting the timing for the following intersections: SR 99 Southbound Off Ramp at Floral Avenue, Highland Avenue at Floral Avenue, SR 99 Northbound Off Ramp at Floral Avenue, Highland Avenue at SR 99 Southbound Ramp and Highland Avenue at Stillman Street.
- For all other signalized intersections, the following settings were utilized in setting the timing:
  - Yellow time consistent with the *California Manual on Uniform Traffic Control Devices* (CA MUTCD) based on approach speeds (Caltrans 2020).
  - Yellow time of 3.2 seconds for left-turn phases.
  - All-red clearance intervals of 1.0 second for all phases.
  - Walk intervals of 7.0 seconds.
- The number of observed pedestrians at existing intersections was utilized under all study scenarios.
- A 3 percent Heavy Vehicle Factor (HVF), or the existing HVF if higher, was utilized under all study scenarios.
- An average of 10 pedestrian calls per hour at signalized study intersections.
- At existing intersections, the observed Peak Hour Factor (PHF) is utilized in the Existing, Existing plus Project and Near Term plus Project Traffic Conditions scenarios.
- For the Cumulative Year 2046 scenarios, the following PHF's were utilized to reflect school traffic operations and an increase in future traffic volumes. As roadways start to reach their saturated flow rates, PHF's tend to increase to 0.90 or higher in urban settings. A PHF of 0.92 is utilized during both peak periods at all study intersections.

Existing Traffic Conditions

Roadway Network

The Project site and surrounding study area are illustrated in Figure 1. Important roadways serving the Project are discussed below.

Golden State Boulevard is an existing northwest-southeast (diagonal) four-lane divided arterial in the vicinity of the proposed Project. In this area, Golden State Boulevard extends northwest of Highland Avenue and southeast of Park Street. Golden State Boulevard turns into Whitson Street southeast of Highland Avenue and northwest of Park Street. The City of Selma *General Plan Update 2035* designates Golden State Boulevard in its entirety as an arterial.

Whitson Street is an existing northwest-southeast (diagonal) four-lane divided arterial in the vicinity of the proposed Project. In this area, Whitson Street extends southeast of Highland Avenue and northwest of Park Street. Whitson Street turns into Golden State Boulevard northwest of Highland Avenue and southeast of Park Street. The City of Selma *General Plan Update 2035* designates Whitson Street in its entirety as an arterial.

State Route (SR) 99 is an existing six-lane freeway in the vicinity of the proposed Project. SR 99 traverses the County of Fresno and through the City of Selma in a northwest-southeast direction and serves as the principal connection to various metropolitan areas within the Central San Joaquin Valley.

Highland Avenue is an existing north-south two-lane collector in the vicinity of the proposed Project. Highland Avenue extends between Dinuba Avenue and Floral Avenue. South of Floral Avenue, State Route 43 is also known as Highland Avenue. The City of Selma *General Plan Update 2035* designates Highland Avenue as an arterial between Manning Avenue and Mountain View. The Caltrans Transportation Concept Report for SR 43 classifies SR 43 between Floral Avenue and Nebraska Avenue as a principal arterial.

Future North-South Road is a future north-south two-lane collector planned to be constructed adjacent to the proposed Project. Future North-South Road is planned to be constructed as a two-lane collector with a two-way left turn lane on center between Floral Avenue and Stillman Street.

DeWolf Avenue is an existing north-south roadway in the vicinity of the proposed Project. DeWolf Avenue is a two-lane undivided roadway throughout the City of Selma SOI. The City of Selma *General Plan Update 2035* does not have any stated plans for DeWolf Avenue.

Floral Avenue is an existing east-west roadway adjacent to the proposed Project. Floral Avenue is a two-lane undivided roadway west of Leonard Avenue, a four-lane divided roadway between Leonard Avenue and Whitson Street, a four-lane undivided collector between Whitson Street and Wright Street and a two-lane undivided collector east of Wright Street. The City of Selma *General Plan Update 2035* states Floral Avenue shall be widened to four lanes and designates Floral Avenue as an arterial between Whitson Street and DeWolf Avenue.

Stillman Street is an existing east-west roadway in the vicinity of the proposed Project and will be constructed further west along the southern boundary of the Project. Stillman Street is a two-lane undivided roadway throughout the City of Selma SOI. The City of Selma *General Plan Update 2035* does not have any stated plans for Stillman Street.

Rose Avenue is an existing east-west roadway in the vicinity of the proposed Project. Rose Avenue is a two-lane undivided roadway west of Thompson Avenue, a four-lane undivided roadway between McCall Avenue and Country Club Lane and a two-lane undivided roadway east of County Rose Lane. The City of Selma General Plan Update 2035 does not have any stated plans for Rose Avenue.

Traffic Signal Warrants

The CA MUTCD indicates that an engineering study of traffic conditions, pedestrian characteristics and physical features of an intersection shall be conducted to determine whether installation of traffic signal controls is justified. The CA MUTCD provides a total of nine (9) warrants to evaluate the need for traffic signal controls. These warrants include 1) Eight-Hour Vehicular Volume, 2) Four-Hour Vehicular Volume, 3) Peak Hour, 4) Pedestrian Volume, 5) School Crossing, 6) Coordinated Signal System, 7) Crash Experience, 8) Roadway Network and 9) Intersection Near a Grade Crossing. Signalization of an intersection may be appropriate if one or more of the signal warrants are satisfied. However, the CA MUTCD also states that "The satisfaction of a signal warrant or warrants shall not in itself require the installation of a traffic control signal" (Caltrans 2020).

If traffic signal warrants are satisfied when a LOS threshold impact is identified at an unsignalized intersection, then installation of a traffic signal control may serve as an improvement measure. For instances where traffic signal warrants are satisfied, a traffic signal control is not considered to be the default improvement measure. Prior to assuming that an intersection will be signalized, an attempt is made to improve the intersection approach lane geometrics in order to improve its LOS while maintaining the existing intersection controls. If the additional lanes did not result in acceptable LOS at the intersection, then in those cases implementation of a traffic signal control would be considered.

Warrant 3 was prepared for the unsignalized intersections under the Existing Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, only the intersection of Highland Avenue at Rose Avenue satisfies Warrant 3. Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the intersection of Highland Avenue at Rose Avenue be signalized.

Results of Existing Level of Service Analysis

Figure 2 illustrates the Existing Traffic Conditions turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing Traffic Conditions scenario are provided in Appendix E. Table I presents a summary of the Existing peak hour LOS at the study intersections.

At present, the intersection of Highland Avenue at Rose Avenue exceeds the LOS threshold during the PM peak period. All other study intersections currently operate at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection.

- Highland Avenue / Rose Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Signalize the intersection with protective left-turn phasing in all directions.

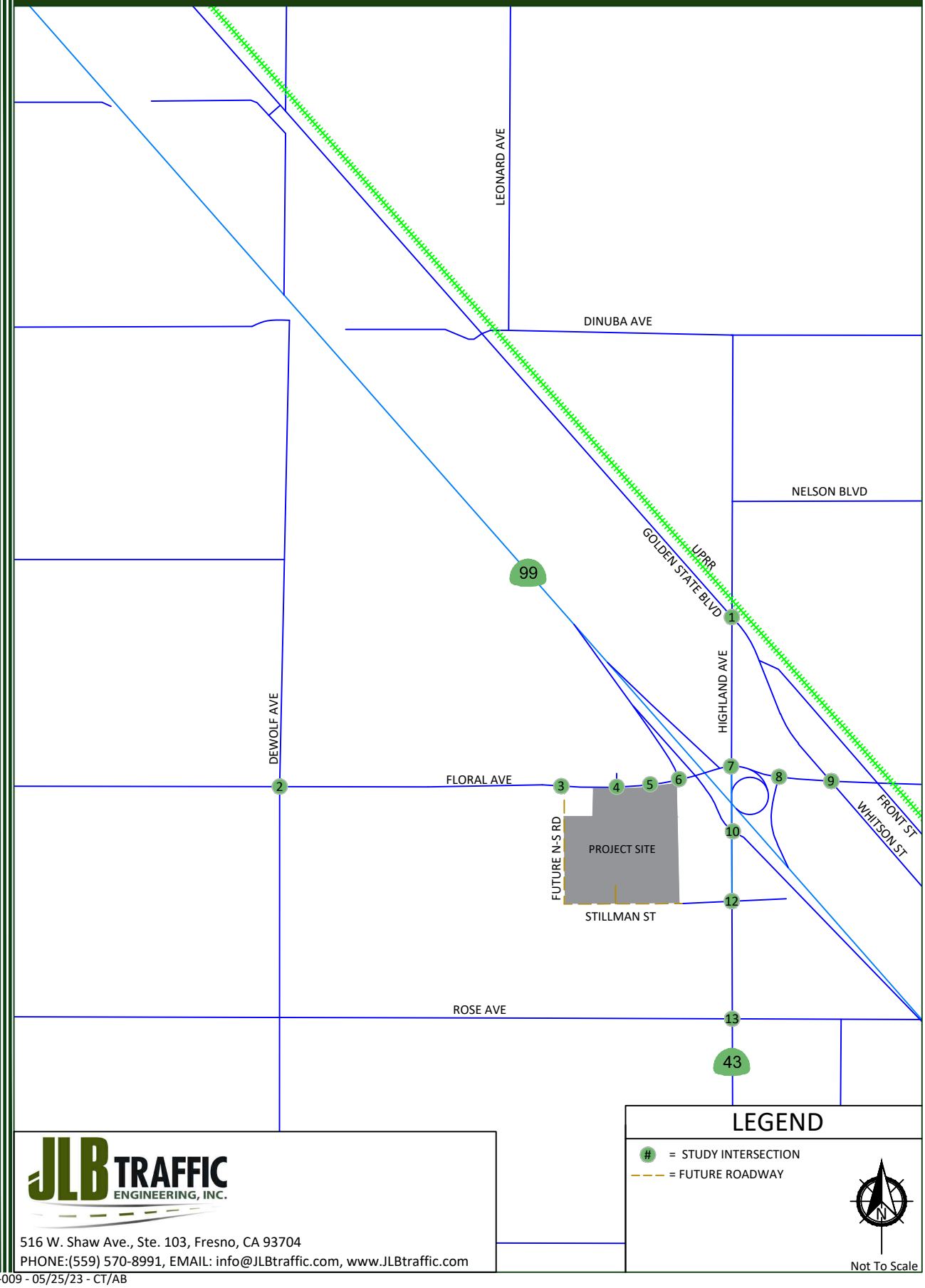
Table I: Existing Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Highland Avenue / Golden State Boulevard	Traffic Signal	22.4	C	23.6	C
2	DeWolf Avenue / Floral Avenue	Two-Way Stop	10.1	B	11.5	B
3	Future North-South Road / Floral Avenue	One-Way Stop	9.9	A	11.5	B
4	Walmart Main Driveway / Floral Avenue	Traffic Signal	11.8	B	17.8	B
5	Eastern Driveway / Floral Avenue	Does Not Exist	-	-	-	-
6	SR 99 Southbound Off-Ramp / Floral Avenue	Traffic Signal	14.7	B	20.8	C
7	Highland Avenue / Floral Avenue	Traffic Signal	26.0	C	35.6	D
8	SR 99 Northbound Off-Ramp / Floral Avenue	Traffic Signal	8.4	A	6.7	A
9	Whitson Street / Floral Avenue	Traffic Signal	20.3	C	21.6	C
10	Highland Avenue / SR 99 Southbound Ramps	Traffic Signal	10.2	B	10.7	B
11	Southern Driveway / Stillman Street	Does Not Exist	-	-	-	-
12	Highland Avenue / Stillman Street	Traffic Signal	16.3	B	26.4	C
13	Highland Avenue / Rose Avenue	Two-Way Stop	19.4	C	**46.2**	**E**
		Improved (Traffic Signal)	14.7	B	15.5	B

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Casitas Selma - City of Selma
Vicinity Map

Figure 1



LEGEND

= STUDY INTERSECTION

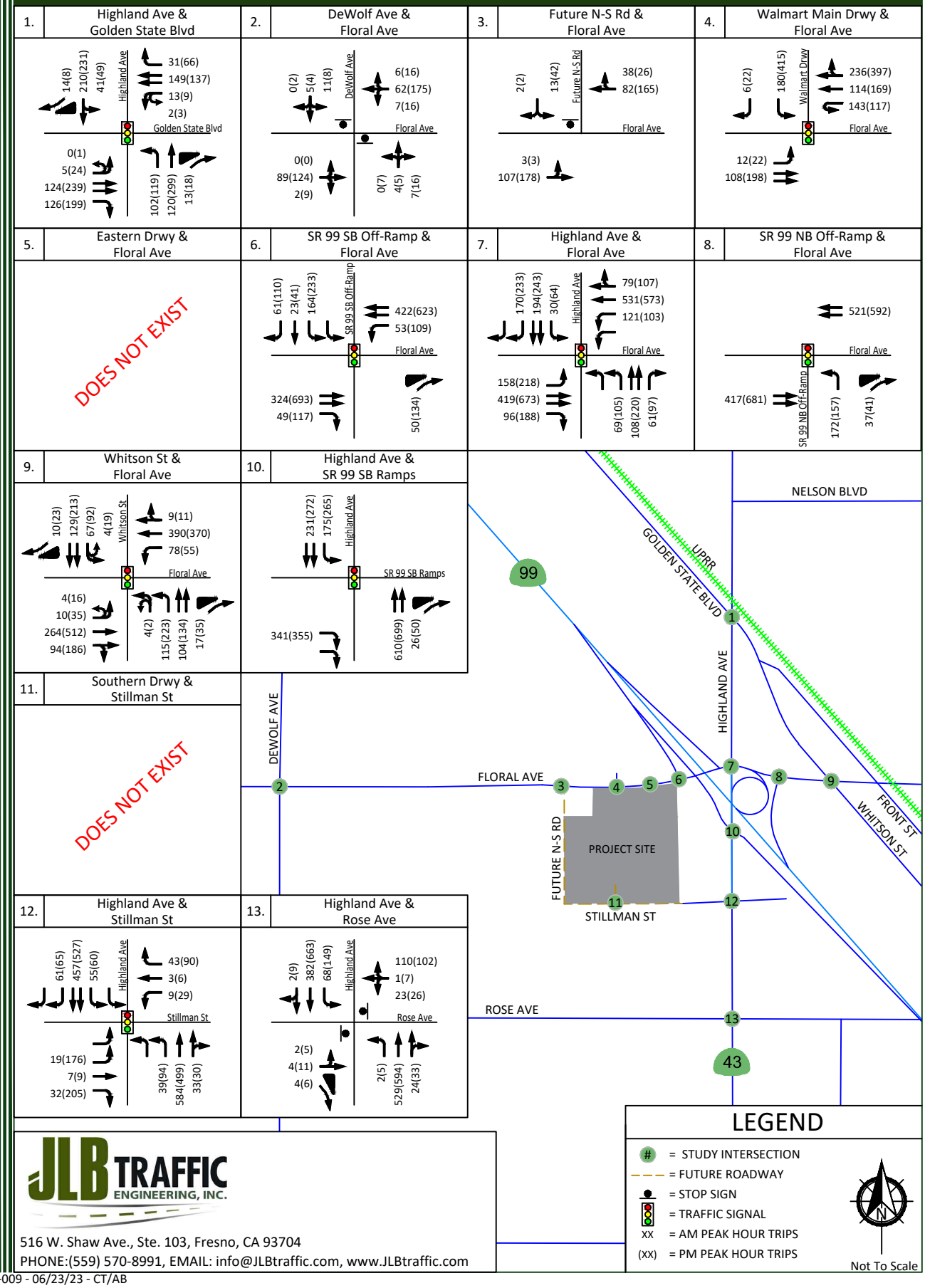
= FUTURE ROADWAY

Not To Scale

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Casitas Selma - City of Selma
Existing - Traffic Volumes, Geometrics and Controls

Figure 2



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Existing plus Project Traffic Conditions

Project Description

The Project proposes to develop approximately 36.5 net acres with a mix of residential, commercial and park space. Based on data provided to JLB, the Project is consistent with the City of Selma *General Plan Update 2035*. Figure 3 illustrates the latest Project Site Plan.

Project Access

Based on the latest Project Site Plan, access to and from the Project site will predominantly be from six (6) access points. The Project will also construct the Future N-S Street between Floral Avenue and Stillman Avenue along the western boundary of the Project. Two (2) access points will be located on the south side of Floral Avenue approximately 730 feet and 230 feet west of the State Route 99 Southbound Off Ramp. The westernmost access point is proposed as full access and the eastern driveway is proposed as right-in right-out access. One (1) access point will be located on the eastern side of the Future North-South Road approximately 850 feet south of Floral Avenue. This access point is proposed as full access. Three (3) access points will be located on the north side of Stillman Street approximately 1,560 feet, 1,350 feet and 1,050 feet west of Highland Avenue. All of these driveways are proposed as full access.

JLB analyzed the location of the existing and proposed roadways and access points relative to those in the vicinity of the Project site. After initial review, comments regarding the onsite circulation, creating internal north-south road to function as a public street and driveway locations were implemented into the latest site plan. In addition to the onsite circulation and driveway locations, the recommendation to add a north south road on the western limit of the Project was also implemented. This road was recommended to alleviate queuing issues along Floral Avenue. It is projected that this road will provide an alternative route for homes and businesses that are located west of State Route 99 and south of Floral Avenue to the Selma Grove Development and the existing Walmart. A review of the existing and proposed roadways and access points indicates that they are located at points that minimize traffic operational impacts to existing and future roadway networks. A Project Site Plan can be found in Figure 3.

Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table II presents the trip generation for the proposed Project with trip generation rates for Automated Car Wash, Quick Lubrication Vehicle Shop, Fast Causal Restaurant, Strip Retail Plaza, Fast-Food Restaurant with Drive-Through Window, Hotel, Multifamily Housing, Affordable Senior Adult Housing, Affordable Housing and Public Park. At buildout and before taking into account internal capture trip reductions, the Project is estimated to generate 10,786 daily, 784 AM peak hour and 889 PM peak hour trips.

Table II: Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM (7-9) Peak Hour						PM (4-6) Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Automated Car Wash (948)	1	Tunnel	775.00	775	42.89	50	50	22	21	43	77.50	50	50	39	39	78
Quick Lubrication Vehicle Shop (941)	3	Service Position	40.00	120	3.00	67	33	6	3	9	4.85	56	44	8	7	15
Fast Casual Restaurant (930)	7.200	k.s.f.	97.14	699	1.43	50	50	5	5	10	12.55	55	45	50	40	90
Strip Retail Plaza (<40k) (822)	7.200	k.s.f.	54.45	392	2.36	60	40	10	7	17	6.59	50	50	24	23	47
Fast-Food Restaurant with Drive-Thru Window (934)	10.099	k.s.f.	467.48	4,721	44.60	51	49	230	220	450	33.03	52	48	174	160	334
Hotel (310)	100	Rooms	7.99	799	0.46	56	44	26	20	46	0.59	51	49	30	29	59
Multifamily Housing (low Rise) (220)	300	d.u.	6.74	2,022	0.40	24	76	29	91	120	0.51	63	37	96	57	153
Senior Adult Housing – Multifamily (252)	120	d.u.	3.24	389	0.20	34	66	8	16	24	0.25	56	44	17	13	30
Affordable Housing – Income Limits (223)	180	d.u.	4.81	866	0.36	29	71	19	46	65	0.46	59	41	49	34	83
Public Park (411)	3.600	Acres	0.78	3	0.02	59	41	0	0	0	0.11	55	45	0	0	0
Total Project Trips				**10,786**				**355**	**429**	**784**				**487**	**402**	**889**

Note: d.u. = Dwelling Unit
k.s.f. = Thousand Square Feet
Automated Car Wash (948) Daily Rate = 10 times the PM Peak Hour Rate
Automated Car Wash (948) AM Rate calculated based on time of day distributions provided by ITE

It is projected that this Project will benefit from internally captured trips. Due to the amount of dense residential units and the proximity of retail land uses, it is safe to assume that these internal capture trips will stay within the confines of the Project. Internal capture rates were obtained from the 3rd Edition of the *Trip Generation Handbook* by ITE. These rates were implemented into the NCHRP 684 Internal Trip Capture Estimation Tool Developed by the Texas A&M Transportation Institute. As can be seen in Table III, there are 1,555 Daily, 98 AM peak hour and 322 PM peak hour trips that would be internally captured.

Table III: Internal Capture Trip Generation

Land Use (ITE Code)	Daily	AM (7-9) Peak Hour			PM (4-6) Peak Hour		
	Total	In	Out	Total	In	Out	Total
Retail	-329	-8	-5	-12	-44	-41	-85
Restaurant	-544	-37	-7	-44	-53	-76	-129
Residential	-584	-4	-33	-37	-44	-32	-76
Hotel	-98	-1	-4	-5	-20	-12	-32
Total Internally Captured Project Trips	**-1,555**	**-49**	**-49**	**-98**	**-161**	**-161**	**-322**

The Project Trip Generation was subtracted by the Internal Capture Trip Generation to produce the External Project Trip Generation. The internal capture worksheet can be found in Appendix F. As can be seen in Table IV, the proposed Project is estimated to generate 9,231 daily, 686 AM peak hour and 567 PM peak hour external trips.

Table IV: External Project Trip Generation

Land Use (ITE Code)	*Daily*	*AM (7-9) Peak Hour*			*PM (4-6) Peak Hour*		
	Total	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Project Trip Generation	10,786	355	429	784	487	402	889
Internal Capture	-1,555	-49	-49	-98	-161	-161	-322
Total External Project Trips	**9,231**	**306**	**380**	**686**	**326**	**241**	**567**

The trip generation that was analyzed within this TIA was derived from the original site plan provided to JLB. As time has gone by, the site plan has been slightly modified. JLB compared the analyzed trip generation to that of the latest Project site plan. Table V presents the analyzed trip generation with trip generation rates for Strip Retail Plaza, Fast-Food Restaurant with Drive-Through Window, Hotel, Multifamily Housing, Affordable Senior Adult Housing, Affordable Housing and Public Park. At buildout and before taking into account internal capture trip reductions, the analyzed Project Site plan was estimated to generate 10,829 daily, 841 AM peak hour and 852 PM peak hour trips.

Table V: Analyzed Project Trip Generation

Land Use (ITE Code)	*Size*	*Unit*	*Daily*		*AM (7-9) Peak Hour*						*PM (4-6) Peak Hour*					
			Rate	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*
Strip Retail Plaza (<40k) (822)	18.000	k.s.f.	54.45	980	2.36	60	40	25	17	42	6.59	50	50	60	59	119
Fast-Food Restaurant with Drive-Thru Window (934)	12.000	k.s.f.	467.48	5,610	44.60	51	49	273	262	535	33.03	52	48	206	190	396
Hotel (310)	120	Rooms	7.99	959	0.46	56	44	31	24	55	0.59	51	49	36	35	71
Multifamily Housing (low Rise) (220)	300	d.u.	6.74	2,022	0.40	24	76	29	91	120	0.51	63	37	96	57	153
Senior Adult Housing – Multifamily (252)	120	d.u.	3.24	389	0.20	34	66	8	16	24	0.25	56	44	17	13	30
Affordable Housing – Income Limits (223)	180	d.u.	4.81	866	0.36	29	71	19	46	65	0.46	59	41	49	34	83
Public Park (411)	3.600	Acres	0.78	3	0.02	59	41	0	0	0	0.11	55	45	0	0	0
Total Project Trips				**10,829**				**385**	**456**	**841**				**464**	**388**	**852**

It is projected that the analyzed Project site plan would benefit from internally captured trips. Due to the amount of dense residential units and the proximity of retail land uses, it is safe to assume that these internal capture trips will stay within the confines of the analyzed Project. These rates were implemented into the NCHRP 684 Internal Trip Capture Estimation Tool Developed by the Texas A&M Transportation Institute. As can be seen in Table VI, there are 1,521 Daily, 90 AM peak hour and 292 PM peak hour trips that would be internally captured.

Table VI: Analyzed Project Internal Capture Trip Generation

Land Use (ITE Code)	*Daily*	*AM (7-9) Peak Hour*			*PM (4-6) Peak Hour*		
	Total	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Retail	-251	-5	-3	-8	-37	-35	-72
Restaurant	-564	-35	-6	-41	-49	-69	-118
Residential	-588	-4	-33	-37	-41	-31	-72
Hotel	-118	-1	-3	-4	-19	-11	-30
Total Internally Captured Project Trips	**-1,521**	**-45**	**-45**	**-90**	**-146**	**-146**	**-292**

The Analyzed Trip Generation was subtracted by the Analyzed Internal Capture Trip Generation to produce the Analyzed External Project Trip Generation. As can be seen in Table VII, the proposed Project is estimated to generate 9,308 daily, 751 AM peak hour and 560 PM peak hour external trips.

Table VII: Analyzed Project External Trip Generation

Land Use (ITE Code)	*Daily*	*AM (7-9) Peak Hour*			*PM (4-6) Peak Hour*		
	Total	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Analyzed Trip Generation	10,829	385	456	841	464	388	852
Internal Capture	-1,521	-45	-45	-90	-146	-146	-292
Total External Project Trips	**9,308**	**340**	**411**	**751**	**318**	**242**	**560**

The comparison between the Project Trip Generation and the Analyzed Project Trip Generation results in the latest Project site plan decreasing the daily trips and the AM peak hour trips while increasing the PM peak hour trips. As can be seen on Table VIII, the Latest Project Site Plan results in a decrease of 77 daily trips, a decrease of 65 AM peak hour trips and an increase of 7 PM peak hour trips. Due to the increase being miniscule, it is in the opinion of JLB that the findings of this analysis would not be affected by an increase of 7 trips in the PM peak period. Given that the PM peak is the only peak that is estimated to generate more traffic and that it only generates 7 more peak hour trips than originally analyzed. This miniscule increase in traffic during the PM peak is not projected to result in changes to the LOS, queuing or recommendations presented within this report. As such, it is JLB's opinion that this analysis effectively analyzes the latest Project site plan.

Table VIII: Difference in Trip Generation

Land Use (ITE Code)	*Daily*	*AM (7-9) Peak Hour*			*PM (4-6) Peak Hour*		
	Total	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Project Trip Generation	9,231	306	380	686	326	241	567
Analyzed Trip Generation	9,308	340	411	751	318	242	560
Difference in Trip Generation	**-77**	**-34**	**-31**	**-65**	**8**	**-1**	**7**

Trip Distribution

The trip distribution assumptions were developed based on existing travel patterns, the Fresno COG Project Select Zone, the existing roadway network, engineering judgment, data provided by the developer, knowledge of the study area, existing residential and commercial densities and the City of Selma *General Plan Update 2035* Circulation Element in the vicinity of the Project site. The Project's trip generation data was provided to Fresno COG in order to conduct a Project-specific Traffic Analysis Zone (TAZ) analysis using the Fresno COG ABM (Cumulative Year 2046). The Fresno COG Project Select Zone results provided by Kittelson & Associates are contained in Appendix C. Figure 4 illustrates the Project Only Trips at the study intersections.

Active Transportation Plan

The Selma *Active Transportation Plan* (ATP), approved in April 2018, outlines the City's vision for active transportation in which a complete, safe and comfortable network of trails, sidewalks and bikeways serve all who live and work in Selma. The *ATP* aims to a) create a network that connects residents to key destinations, b) create user-friendly facilities to promote walking and bicycling and c) increase safety by improving crosswalks and sidewalks in Selma.

In order to achieve these goals for active transportation, the *ATP* proposes a comprehensive network of citywide bikeways, trails and sidewalks. The recommended network would add 5.3 miles of Class I Bike Paths, 39.8 miles of Class II Bike Lanes, 8.9 miles of Class III Bike Routes, 0.9 miles of Class IV Separated Bikeways and 6.1 miles of sidewalks. This ATP also makes recommendations for cross sections of a proposed trail along the east side of the City, roadway crossing improvements and bicycle parking. This network will be constructed in conjunction with adjacent land developments, roadway maintenance, capacity enhancement and active transportation infrastructure projects using funds from different local, state and federal sources.

Bikeways

The Selma *ATP* classifies bicycle facilities into the following types:

- Class I Bikeway (Bike Path) – Provides a completely separated right-of-way for exclusive use of bicycles and pedestrians with crossflow minimized.
- Class II Bikeway (Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway.
- Class III Bikeway (Bike Route) – Provides a shared use with pedestrians or motor vehicle traffic, typically on lower volume roadways.
- Class IV Bikeways (Separated Bikeways) – Provides a protected lane for one-way bike travel (one-way cycle track) and protected lanes for two-way bike travel (two-way cycle track) on a street or highway.

Currently, Class II Bikeways currently exist adjacent to and in the vicinity of the Project site. Adjacent to the Project site, Class II Bikeways exist along Floral Avenue. In the vicinity of the Project site, Class II Bikeways exist along portions of Floral Avenue and Highland Avenue. Currently, bicycle travel through the State Route 99 at Floral Avenue interchange and along State Route 43 have been categorized as high stress.

The *Selma ATP* recommends that Class II Bikeways be implemented adjacent to and in the vicinity of the Project site (City of Selma 2018). Adjacent to the Project site, Class II Bikeways are planned along Floral Avenue. In the vicinity of the Project site, Class II Bikeways are planned along remaining portions of Floral Avenue, Highland Avenue and Golden State Boulevard. In the vicinity of the Project site, Class I Bikeways are planned along portions of Golden State Boulevard. In the vicinity of the Project site, Class III Bikeways are planned along portions of Rose Avenue. Therefore, it is recommended that the Project retain the Class II Bikeway along its frontage to Floral Avenue, consistent with the *Selma ATP,* and that a Class II Bikeway be implemented along the Project's frontage to the Future North-South Road. Furthermore, it is recommended that the City of Selma and Caltrans collaborate on a future analysis of bicycle facilities through the State Route 99 at Floral Avenue interchange and seek funding sources for the reconstruction of this interchange to promote alternate modes of transportation.

Walkways

The *Selma ATP* classifies pedestrian facilities as either sidewalk or Class I Bike Paths, which allow for exclusive use of bicyclists and pedestrians. Currently, pedestrian sidewalks exist in the vicinity of the Project site. In the vicinity of the Project, pedestrian sidewalks exist along portions of Floral Avenue, Highland Avenue, Stillman Street and Rose Avenue. Currently, sidewalks provide a direct connection to three (3) bus routes that have stops within 0.5 miles of the Project. These stops and routes are described in further detail in the Transit section of this Report.

The *Selma ATP* recommends that pedestrian sidewalks and Class I Bike Paths be implemented adjacent to and in the vicinity of the Project site. Therefore, it is recommended that the project construct ADA compliant pedestrian sidewalks along all internal streets connecting all uses to external sidewalks and along the Project's frontage to Floral Avenue, Future North-South Road and Stillman Street. Furthermore, it is recommended that the City of Selma and Caltrans collaborate on a future analysis of pedestrian facilities through the State Route 99 at Floral Avenue interchange and seek funding sources for the reconstruction of this interchange to promote alternate modes of transportation.

Transit

The Selma Transit Division operates under MV Transportation, Monday through Friday from 7:00 AM to 5:30 PM. The Selma Transit Division operates five (5) compressed natural gas vehicles. The natural gas vans operate on an "on call basis" and will pick up and drop off at the requested destination within the City's SOI. One (1) vehicle operates on Saturdays from 8:00 AM to 5:00 PM.

Fresno County Rural Transit Agency (FCRTA) is the transit operator in the County of Fresno. At present, there are two (2) Transit Routes that serve the City of Selma. These include Kingsburg-Reedley Inter-City Transit and Southeast Inter-City Transit. Kingsburg-Reedley Transit runs in the vicinity of the proposed Project via Whitson Street. This route provides a direct connection to the cities of Kingsburg, Selma, Fowler, Parlier and Reedley. The closest stop is located approximately 0.5 miles east of the proposed Project near the Selma Plaza Shopping Center. Southeast Transit runs in the vicinity of the proposed Project via Whitson Street. This Route provides a direct connection to the cities of Kingsburg, Selma, Fowler and Fresno. The closest stop is located approximately 0.5 miles east of the proposed Project near the Selma Plaza Shopping Center.

Kings Area Rural Transit (KART) is the transit operator in the County of Kings. KART Route 17 runs in the vicinity of the proposed Project via Highland Avenue. The closest stop is located near Selma Kaiser Hospital, approximately 0.2 miles east of the proposed Project. This Route provides a direct connection to Valley Children's Hospital, Fresno Kaiser Hospital, Fresno Veterans Hospital, Community Regional Center, Fresno Fulton Mall and Selma Kaiser Hospital.

Retention of the existing and expansion of future transit routes is dependent on transit ridership demand and available funding.

Safe Routes to School

Kindergarten through 12th grade students from the Project will be served by the Selma Unified School District (SUSD). The SUSD provides transportation for students who live in excess of an established radius zone. The zone is a radius of 1.0 mile for Kindergarten through 6th grade and 2.5 miles for 7th through 12th grade.

Based on attendance boundaries at the time of the preparation of this TIA, elementary school students would attend Eric White Elementary School located on the northeast quadrant of the intersection of Highland Avenue at Nebraska Avenue. Eric White Elementary School is located 0.65 and 0.95 from the nearest and farthest residential unit on the Project, respectively. Therefore, it is anticipated that elementary school students will need to walk, bike or be driven between the Project and school.

The most direct path from the Project to the Eric White Elementary School campus can begin at the northwest quadrant of Highland Avenue at Stillman Street. Students would proceed to travel east on the north side of Stillman Street until reaching the northwest corner of Highland Avenue at Stillman Street. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the north and east legs or the west and south legs to reach the southeast corner of Highland Avenue at Stillman Street. Students would proceed to travel south on the east side of Highland Avenue until reaching the intersection of Highland Avenue at Rose Avenue. This intersection is controlled by a two-way stop on Rose Avenue that contains no marked crosswalks. Students would cross the east leg to reach the southeast corner of Highland Avenue at Rose Avenue. Students would proceed east on the south side of Rose Avenue until reaching the intersection of Mitchell Avenue at Rose Avenue. This intersection is controlled by a one-way stop on Mitchell Avenue that contains a marked crosswalk on the east leg. Students would proceed to travel south of the west side of Mitchell Avenue until reaching the northwest corner of Mitchell Avenue at Fig Street. This intersection is controlled by a one-way stop on Fig Street that contains a marked crosswalk on the west and north legs. Students would cross the west leg to reach the southwest corner of Mitchell Avenue at Fig Street. Students would proceed to travel west on the south side of Fig Street until reaching an entrance to the school campus.

Based on attendance boundaries at the time of the preparation of this TIA, middle school students would attend Abraham Lincoln Middle School located on the northeast quadrant of Orange Avenue at Floral Avenue. Abraham Lincoln Middle School is located 1.80 and 2.10 from the nearest and farthest residential unit on the Project, respectively. Therefore, it is anticipated that middle school students will need to walk, bike or be driven between the Project and school.

The most direct path from the Project to the Abraham Lincoln Middle School campus can begin at the southwest quadrant of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed east on the south side of Floral Avenue until reaching the southwest corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would cross the west and north legs to reach the northeast corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Highland Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east and south legs. Students would cross the north leg to reach the northeast corner of Highland Avenue at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Whitson Street at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the north leg to reach the northeast corner of Whitson Street at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue crossing the Union Pacific Railroad until reaching the intersection of Thompson Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would cross the west and south legs to reach the southeast corner of Thompson Avenue at Floral Avenue. Students would proceed to travel east on the south side of Floral Avenue until reaching the intersection of Wright Street at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the south

leg to reach the southeast corner of Wright Street at Floral Avenue. Students would proceed east on the south side of Floral Avenue until reaching the intersection of McCall Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the south legs to reach the southeast corner of McCall Avenue at Floral Avenue. Students would proceed to travel east on the south side of Floral Avenue until reaching the intersection of Orange Avenue at Floral Avenue. This intersection is controlled by an all-way stop that contains marked crosswalks on all legs. Students would cross the west and north or the south and east legs to reach the northeast corner of Orange Avenue at Floral Avenue. Students would proceed to travel north on the east side of Orange Avenue until reaching an entrance to the school campus.

Based on attendance boundaries at the time of the preparation of this TIA, high school students would attend Selma High School is located 0.90 and 1.20 from the nearest and farthest residential unit on the Project, respectively. Therefore, it is anticipated that high school students will need to walk, bike or be driven between the Project and school.

The most direct path from the Project to the Selma High School campus can begin at the southwest quadrant of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed east on the south side of Floral Avenue until reaching the southwest corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would cross the west and north legs to reach the northeast corner of the State Route 99 Southbound Off-Ramp at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Highland Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east and south legs. Students would cross the north leg to reach the northeast corner of Highland Avenue at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue until reaching the intersection of Whitson Street at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on all legs. Students would cross the north leg to reach the northeast corner of Whitson Street at Floral Avenue. Students would proceed to travel east on the north side of Floral Avenue crossing the Union Pacific Railroad until reaching the intersection of Thompson Avenue at Floral Avenue. This intersection is controlled by a traffic signal that contains marked crosswalks on the east, west and north legs. Students would proceed to travel north of the west side of Thompson Avenue until reaching the intersection of Highland Avenue at Lewis Street. This intersection is controlled by a one-way stop on Lewis Street that contains marked crosswalks on the west and south legs. Students would cross the south leg to reach the southeast corner of Thompson Avenue at Lewis Street. Students would proceed to travel north on the east die of Thompson Avenue until reaching an entrance to the school campus.

Stretches of Floral Avenue, Highland Avenue and Thompson Avenue that will be utilized by students to reach school campuses do not contain sidewalks. Also, the intersections of Highland Avenue at Rose Avenue and various intersections along Floral Avenue do not contain marked crosswalks. It is recommended that the Project and Selma Unified School district look into funding sources to enhance the walkways for elementary, middle and high school students to and from school campuses.

Roadway Network

The Existing plus Project Traffic Conditions scenario assumes that the existing roadways geometrics and traffic controls will remain in place with the following exceptions. The addition of the Project with its access points, modifications to the intersection of Walmart Main Driveway at Floral Avenue to a four legged intersection with protected left-turn phasing, the extension of Stillman Street west and the construction of the Future North-South Road along the western boundary of the Project between Floral Avenue and Stillman Street. The intersection of the Future North-South Road at Floral Avenue should be constructed with a single left-through-right lane on the east, west and north legs and a left-turn lane and a through-right lane on the south leg. This intersection will be initially controlled by a two-way stop on the north and south legs. Furthermore, it is recommended that the westbound left-turn lane storage length at the intersection of Walmart Main Driveway at Floral Avenue be extended as far east as possible (between 340 and 480 feet) while taking design constraints into consideration. In order to extend this westbound left-turn lane, the eastbound left-turn lane to the east of it will need to be removed. Figure 5 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Existing plus Project Traffic Conditions scenario. These warrants are found in Appendix J. Under this scenario, only the intersection of Highland Avenue at Rose Avenue satisfies Warrant 3. Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the intersection of Highland Avenue at Rose Avenue be signalized.

Results of Existing plus Project Level of Service Analysis

Figure 5 illustrates the Existing plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Existing plus Project Traffic Conditions scenario are provided in Appendix F. Table IX presents a summary of the Existing plus Project peak hour LOS at the study intersections.

Under this scenario, the intersection of Highland Avenue at Rose Avenue is projected to exceed its LOS threshold during the PM peak period. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection.

- Highland Avenue / Rose Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Signalize the intersection with protective left-turn phasing in all directions.

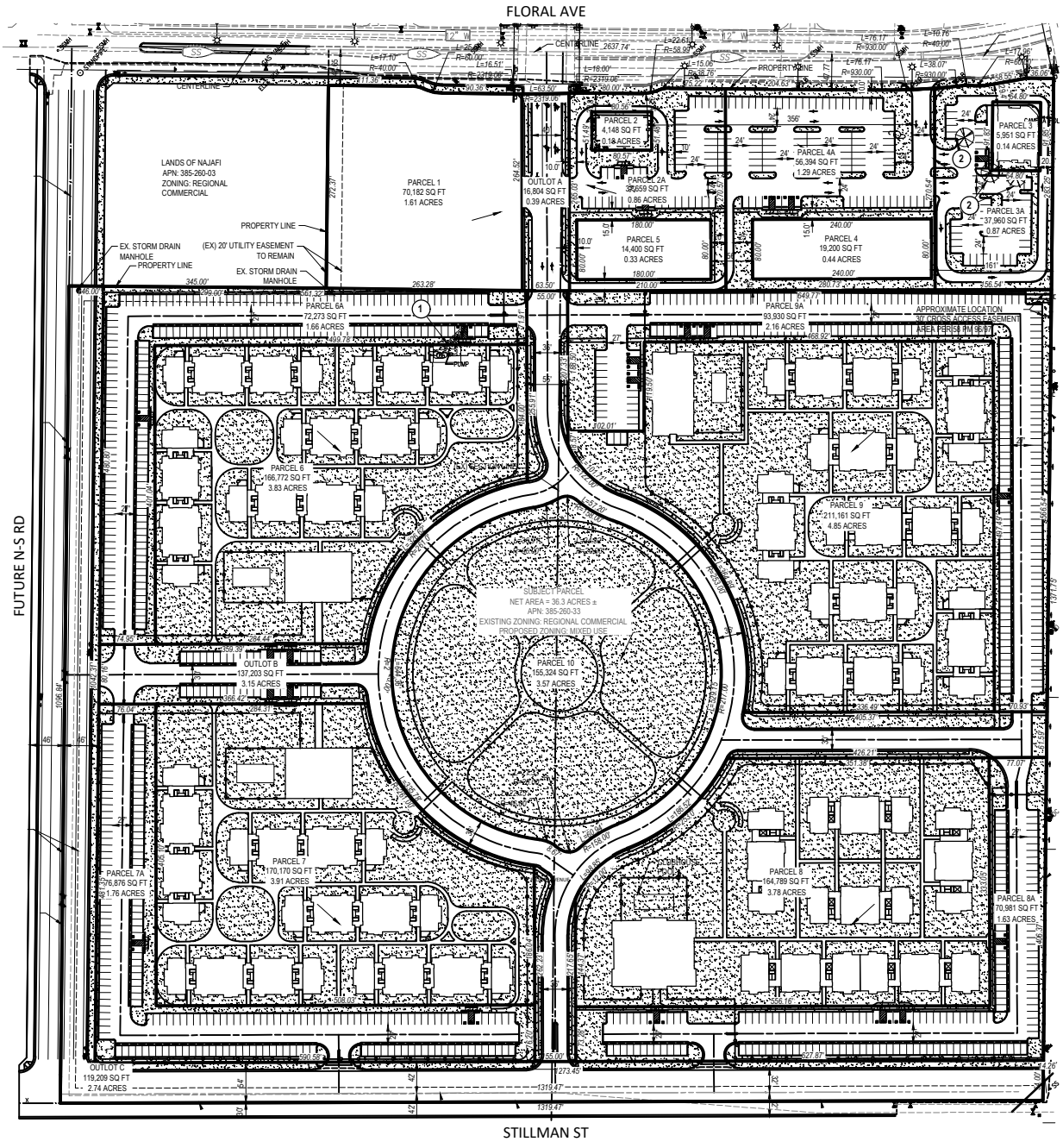
Table IX: Existing Plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7 - 9) Peak Hour		PM (4 - 6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Highland Avenue / Golden State Boulevard	Traffic Signal	22.2	C	24.2	C
2	DeWolf Avenue / Floral Avenue	Two-Way Stop	10.8	B	12.1	B
3	Future North-South Road / Floral Avenue	Two-Way Stop	10.9	B	12.4	B
4	Walmart Main Driveway / Floral Avenue	Traffic Signal	29.9	C	34.2	C
5	Eastern Driveway / Floral Avenue	One-Way Stop	11.1	B	12.6	B
6	SR 99 Southbound Off-Ramp / Floral Avenue	Traffic Signal	19.7	B	26.3	C
7	Highland Avenue / Floral Avenue	Traffic Signal	27.1	C	30.8	C
8	SR 99 Northbound Off-Ramp / Floral Avenue	Traffic Signal	9.9	A	9.1	A
9	Whitson Street / Floral Avenue	Traffic Signal	21.1	C	22.5	C
10	Highland Avenue / SR 99 Southbound Ramps	Traffic Signal	11.4	B	14.3	B
11	Southern Driveway / Stillman Street	One-Way Stop	9.5	A	9.7	A
12	Highland Avenue / Stillman Street	Traffic Signal	20.8	C	33.1	C
13	Highland Avenue / Rose Avenue	Two-Way Stop	20.7	C	**50.1**	**F**
		Improved (Traffic Signal)	14.2	B	16.5	B

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Casitas Selma - City of Selma
Site Plan

Figure 3



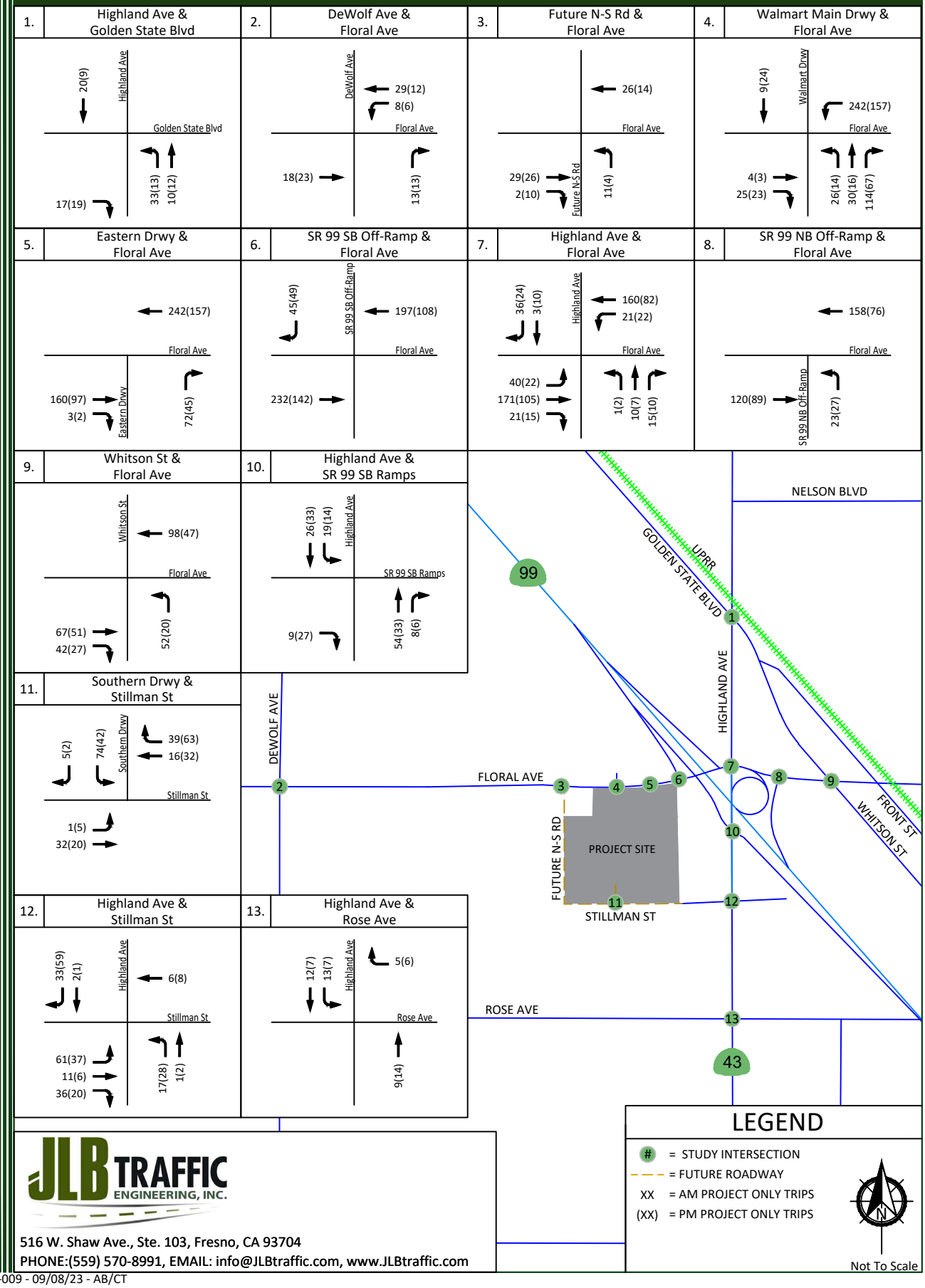
JLB TRAFFIC ENGINEERING, INC.

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Not To Scale

Casitas Selma - City of Selma
Project Only Trips

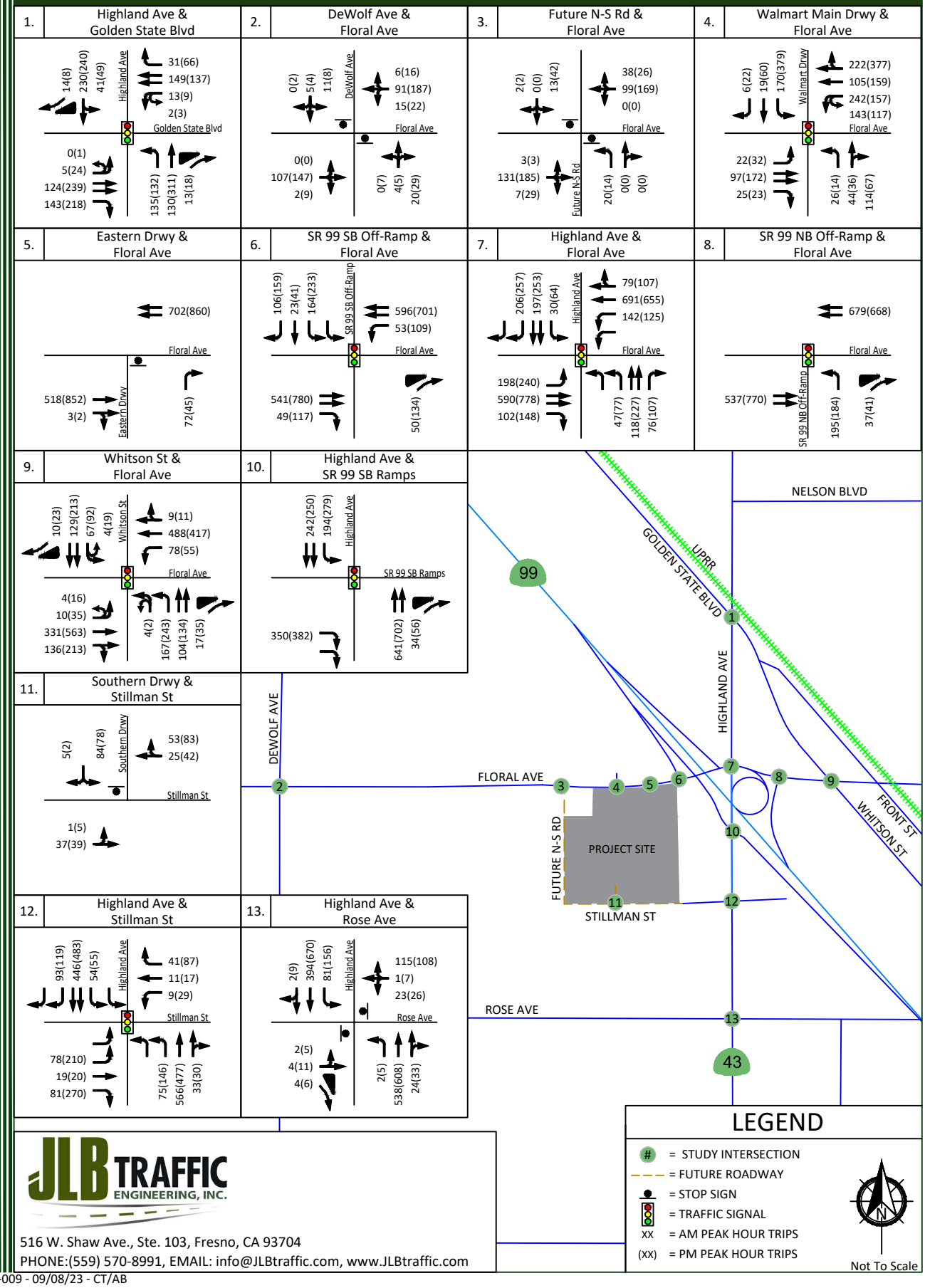
Figure 4



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Casitas Selma - City of Selma
Existing plus Project - Traffic Volumes, Geometrics and Controls

Figure 5



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Near Term plus Project Traffic Conditions

Description of Near Term Projects

Near Term Projects are approved and/or known Projects that are either under construction, built but not fully occupied, are not built but have final site development review (SDR) approval or for which the lead agency or responsible agencies have knowledge of. The City of Selma staff were consulted throughout the preparation of this Report regarding approved and/or known projects that could potentially impact the study intersections and study segment. JLB staff conducted a reconnaissance of the surrounding area to confirm the Near Term Projects. Therefore, the Near Term Projects listed in Table X were approved, near approval, or in the pipeline within the proximity of the proposed Project.

The trip generation listed in Table X is that which is anticipated to be added to the roadway network by the Near Term Projects between the time of the preparation of this Report and five years after buildout of the proposed Project. As shown in Table X, the total trip generation for the Near Term Projects is 52,746 daily trips, 2,022 AM peak hour trips and 3,985 PM peak hour trips. Figure 6 illustrates the location of the Near Term Projects and their combined trip assignment to the study intersections under this scenario.

Table X: Near Term Projects' Trip Generation

Near Term Project ID	*Near Term Project Name*	*Daily Trips*	*AM Peak Hour*	*PM Peak Hour*
A	Amberwood (portion of)[3]	5,270	389	484
B	Canales (portion of)[3]	4,318	118	407
C	Selma Crossings (Portion of)[3]	9,595	362	879
D	Selma Grove (portion of)[2]	11,519	316	1,066
E	TT 6109[2]	2,974	233	312
F	V5 Commercial[3]	2,552	68	221
G	NEQ Nebraska and Highland Development[1]	7,589	228	271
H	SWQ Nebraska and Highland Development[1]	8,431	272	295
I	Selma Auto Body	498	36	50
Total Near Term Project Trips		**52,746**	**2,022**	**3,985**

Note: 1 = Trip Generation prepared by JLB Traffic Engineering, Inc. based on readily available information
2 = Trip Generation based on a JLB Traffic Engineering, Inc. Traffic Impact Analysis Report
5 = Trip Generation based on a Traffic Impact Analysis Report by another Traffic Engineering Firm

Roadway Network

The Near Term plus Project Traffic Conditions scenario assumes that the Existing plus Project Traffic Conditions roadway geometrics and traffic controls will remain in place. Figure 7 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Near Term plus Project Traffic Conditions scenario. These warrants are found in Appendix J. Under this scenario, only the intersection of Highland Avenue at Rose Avenue satisfies Warrant 3. Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the intersection of Highland Avenue at Rose Avenue be signalized.

Results of Near Term plus Project Level of Service Analysis

Figure 7 illustrates the Near Term plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Near Term plus Project Traffic Conditions scenario are provided in Appendix G. Table XI presents a summary of the Near Term plus Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Future North-South Road at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during the PM peak period. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection.

- Future North-South Road / Floral Avenue
  - Modify the eastbound left-through-right lane to a left-through lane;
  - Add an eastbound through lane with a receiving lane east of Future North-South Road;
  - Add an eastbound right-turn lane;
  - Modify the westbound left-through-right lane to a left-through lane; and
  - Add a westbound through-right lane with a receiving lane west of Future North-South Road.
- Highland Avenue / Floral Avenue
  - Add a second eastbound left-turn lane; and
  - Modify the traffic signal to accommodate the added lane.
- Highland Avenue / Rose Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Signalize the intersection with protective left-turn phasing in all directions.

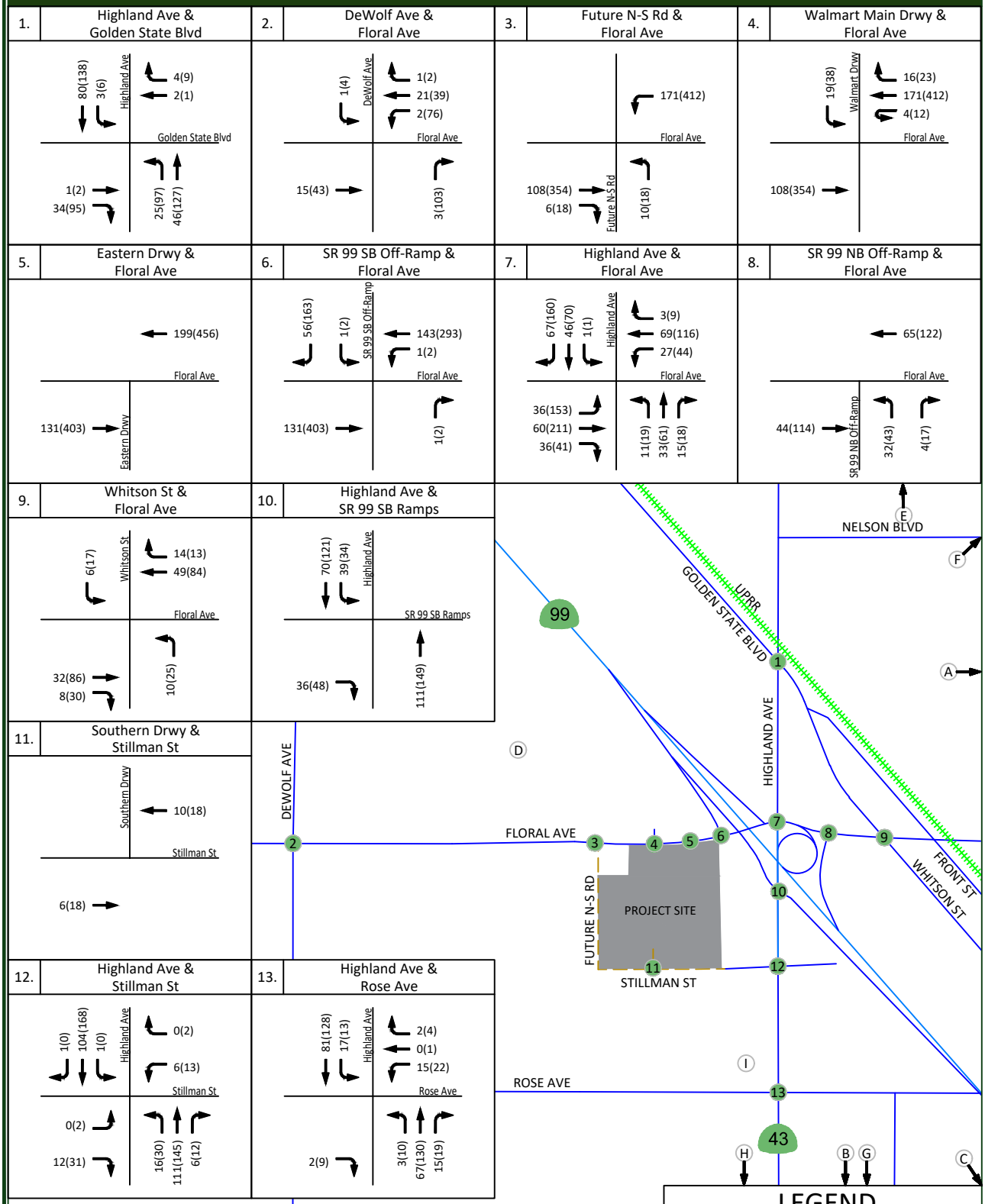
Table XI: Near Term Plus Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7 - 9) Peak Hour		PM (4 - 6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Highland Avenue / Golden State Boulevard	Traffic Signal	25.3	C	33.3	C
2	DeWolf Avenue / Floral Avenue	Two-Way Stop	11.2	B	19.1	C
3	Future North-South Road / Floral Avenue	Two-Way Stop	15.7	C	**46.1**	**E**
		Improved (All-Way Stop)	10.1	B	22.2	C
4	Walmart Main Driveway / Floral Avenue	Traffic Signal	31.9	C	42.6	D
5	Eastern Driveway / Floral Avenue	Two-Way Stop	12.0	B	16.2	C
6	SR 99 Southbound Off-Ramp / Floral Avenue	Traffic Signal	19.4	B	29.7	C
7	Highland Avenue / Floral Avenue	Traffic Signal	29.2	C	**64.1**	**E**
		Improved (Traffic Signal)	26.0	C	51.9	D
8	SR 99 Northbound Off-Ramp / Floral Avenue	Traffic Signal	11.0	B	10.5	B
9	Whitson Street / Floral Avenue	Traffic Signal	19.8	B	23.5	C
10	Highland Avenue / SR 99 Southbound Ramps	Traffic Signal	11.9	B	15.5	B
11	Southern Driveway / Stillman Street	One-Way Stop	9.6	A	10.0	B
12	Highland Avenue / Stillman Street	Traffic Signal	20.2	C	32.8	C
13	Highland Avenue / Rose Avenue	Two-Way Stop	27.9	D	**>120.0**	**F**
		Improved (Traffic Signal)	15.2	B	20.7	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Casitas Selma - City of Selma
Near Term Projects' Trip Assignment

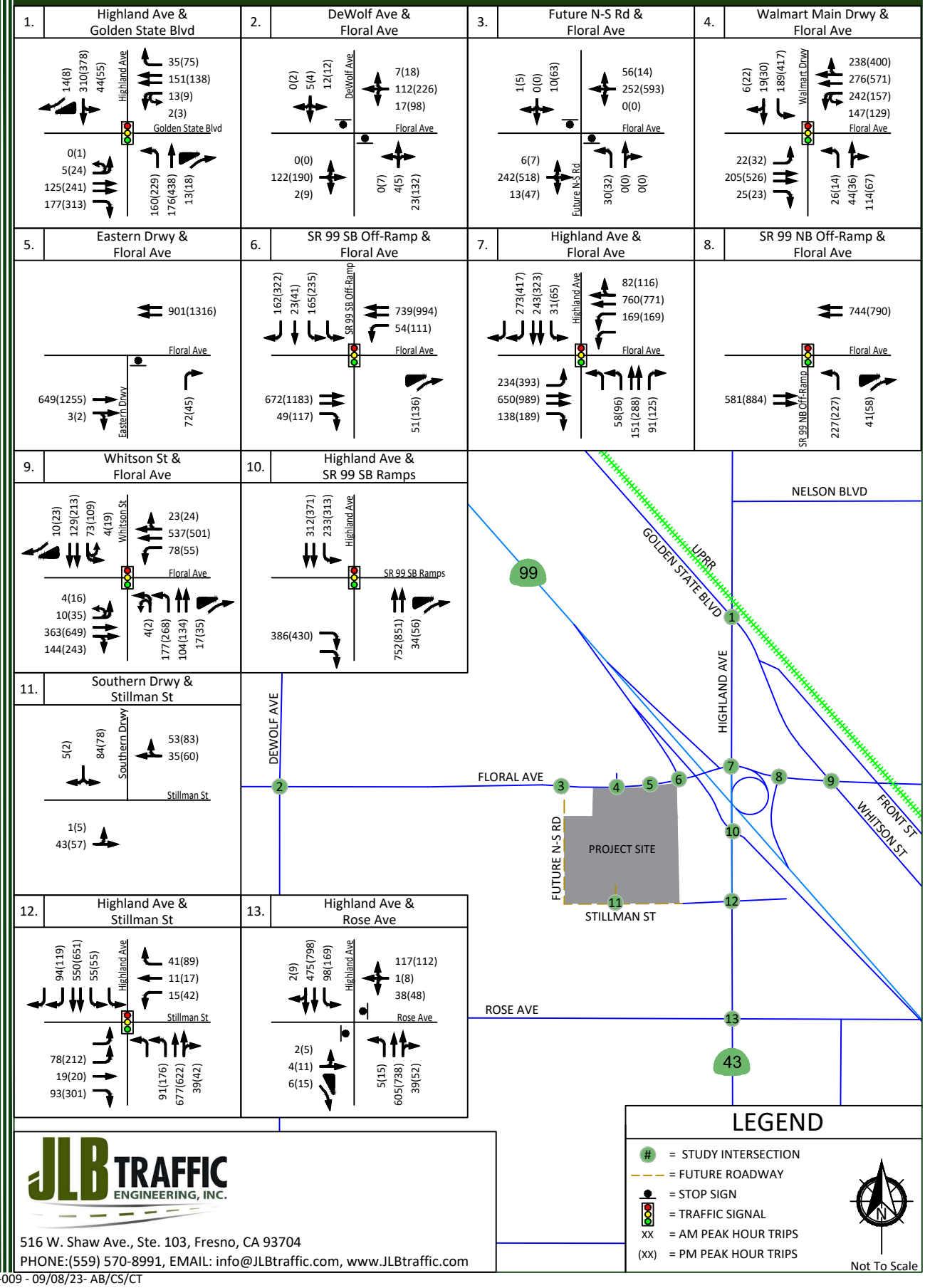
Figure 6



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Casitas Selma - City of Selma
Near Term plus Project - Traffic Volumes, Geometrics and Controls

Figure 7



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Cumulative Year 2046 No Project Traffic Conditions

Roadway Network

The Cumulative Year 2046 No Project Traffic Conditions scenario assumes that the Existing Traffic Conditions roadway geometrics and traffic controls will remain in place. Figure 8 illustrates the location of the Near Term Projects and their combined trip assignment to the study intersections under this scenario. Figure 9 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Cumulative Year 2046 No Project Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, the intersections of DeWolf Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to satisfy Warrant 3 during one or both peak periods. Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the City only consider implementing traffic signal controls at the intersection of Highland Avenue at Rose Avenue.

Results of Cumulative Year 2046 No Project Level of Service Analysis

Figure 9 illustrates the Cumulative Year 2046 No Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2046 No Project Traffic Conditions scenario are provided in Appendix H. Table XII presents a summary of the Cumulative Year 2046 No Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Highland Avenue at Golden State Boulevard, DeWolf Avenue at Floral Avenue, SR 99 Southbound Off-Ramp at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during one or both peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection. Additional improvements are recommended to the intersections of Walmart Main Driveway at Floral Avenue and SR 99 Northbound Off-Ramp at Floral Avenue in order to address queuing issues at these intersections.

- Highland Avenue / Golden State Boulevard
  - Add a southbound left-turn lane;
  - Modify southbound left-through lane to a through-right lane;
  - Remove the southbound right-turn lane; and
  - Modify the phasing scheme to protective left-turn phasing in all directions.
- DeWolf Avenue / Floral Avenue
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Modify the intersection control to an all-way stop.
- Walmart Main Driveway / Floral Avenue
  - Restripe the southbound right-turn lane to a left-right lane.
- SR 99 Southbound Off-Ramp / Floral Avenue
  - Restripe the southbound through lane to a through-right lane.
- Highland Avenue / Floral Avenue
  - Add a second eastbound left-turn lane;
  - Add a westbound right-turn lane; and
  - Modify the phasing scheme to include overlap phases for the southbound right-turn with the eastbound left turn and the eastbound right-turn with the northbound left turn.
- SR 99 Northbound Off-Ramp / Floral Avenue
  - Remove the northbound right-turn lane; and
  - Add a northbound left-right lane.
- Highland Avenue / Rose Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Signalize the intersection with protective left-turn phasing in all directions.

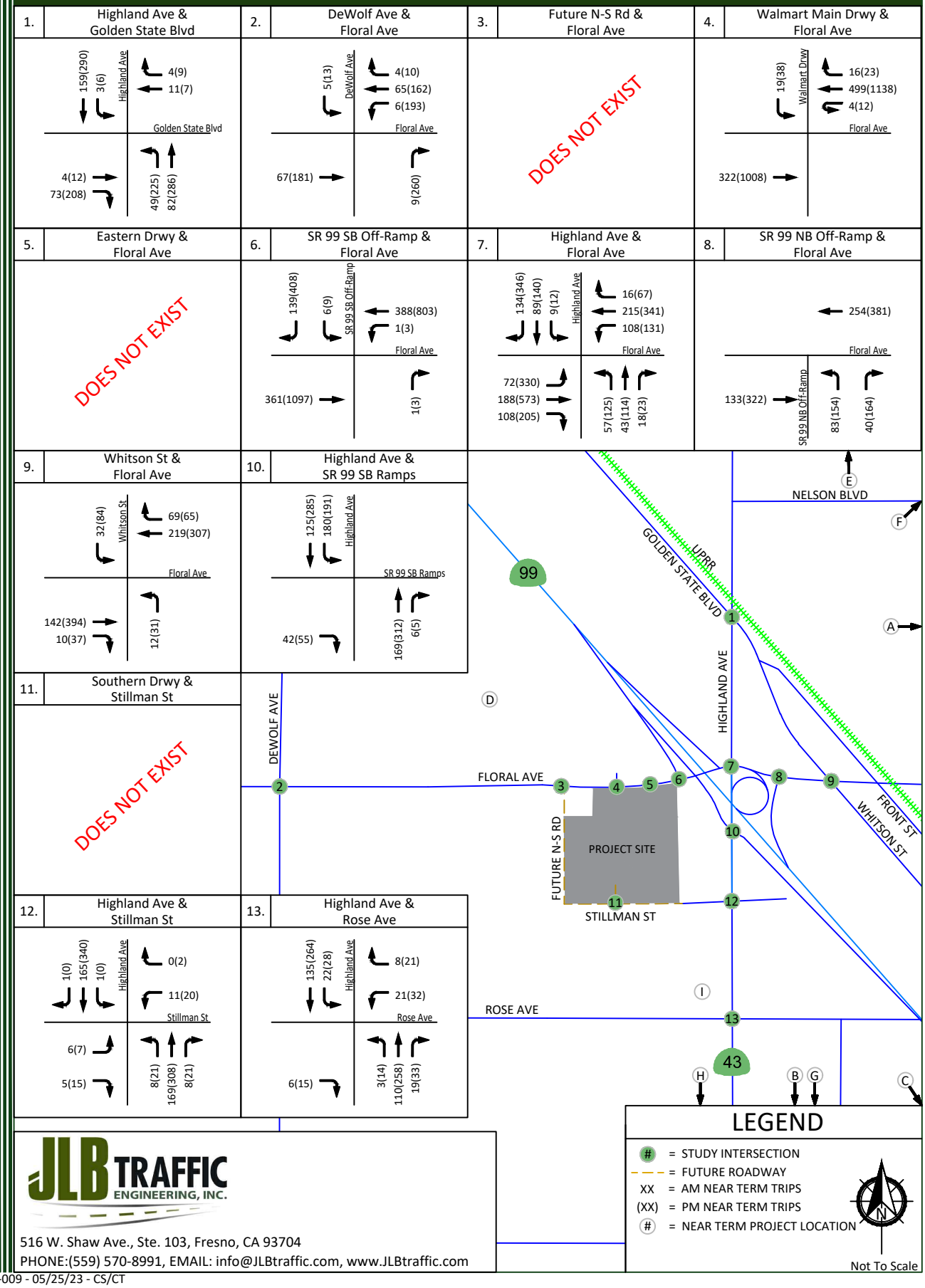
Table XII: Cumulative Year 2046 No Project Intersection LOS Results

ID	Intersection	Intersection Control	AM (7 - 9) Peak Hour		PM (4 - 6) Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1	Highland Avenue / Golden State Boulevard	Traffic Signal	33.6	C	**77.3**	**F**
		Improved (Traffic Signal)	33.4	C	42.1	D
2	DeWolf Avenue / Floral Avenue	Two-Way Stop	12.0	B	**85.4**	**F**
		Improved (All-Way Stop)	8.6	A	16.8	C
3	Future North-South Road / Floral Avenue	Does Not Exist	-	-	-	-
4	Walmart Main Driveway / Floral Avenue	Traffic Signal	11.4	B	33.6	C
		Improved (Traffic Signal)	9.7	A	22.4	C
5	Eastern Driveway / Floral Avenue	Does Not Exist	-	-	-	-
6	SR 99 Southbound Off-Ramp / Floral Avenue	Traffic Signal	18.8	B	**62.7**	**E**
		Improved (Traffic Signal)	19.0	B	37.2	D
7	Highland Avenue / Floral Avenue	Traffic Signal	35.3	D	**>120.0**	**F**
		Improved (Traffic Signal)	29.6	C	51.9	D
8	SR 99 Northbound Off-Ramp / Floral Avenue	Traffic Signal	15.5	B	16.3	B
		Improved (Traffic Signal)	13.1	B	15.4	B
9	Whitson Street / Floral Avenue	Traffic Signal	23.6	C	29.5	C
10	Highland Avenue / SR 99 Southbound Ramps	Traffic Signal	15.4	B	20.0	B
11	Southern Driveway / Stillman Street	Does Not Exist	-	-	-	-
12	Highland Avenue / Stillman Street	Traffic Signal	13.7	B	26.7	C
13	Highland Avenue / Rose Avenue	Two-Way Stop	**92.2**	**F**	**>120.0**	**F**
		Improved (Traffic Signal)	17.1	B	25.6	C

Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Casitas Selma - City of Selma
2046 Near Term Projects' Trip Assignment (No Project)

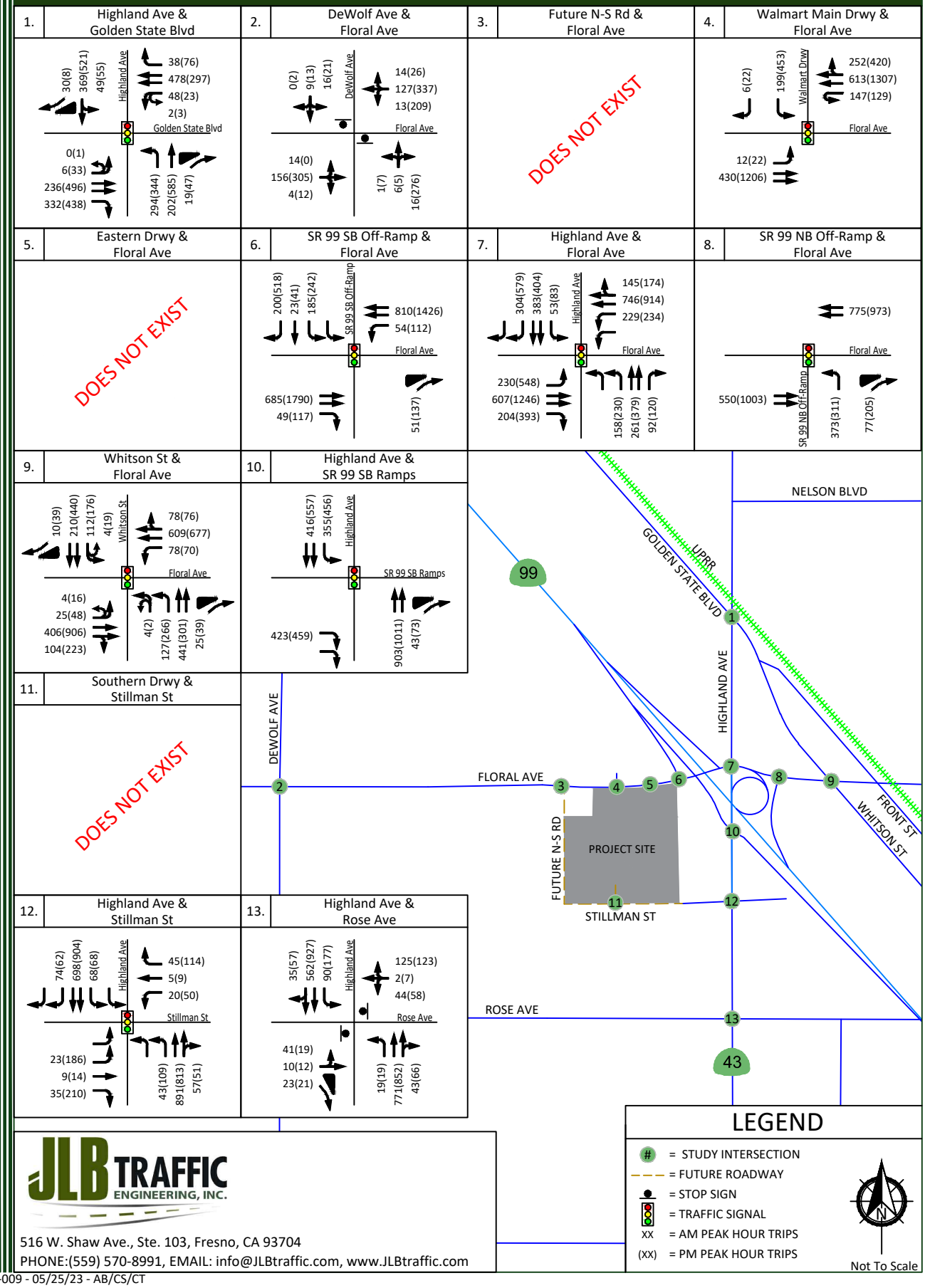
Figure 8



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Casitas Selma - City of Selma
Cumulative Year 2046 No Project - Traffic Volumes, Geometrics and Controls

Figure 9



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Cumulative Year 2046 plus Project Traffic Conditions

Roadway Network

The Cumulative Year 2046 plus Project Traffic Conditions scenario assumes that the Near Term plus Project Traffic Conditions roadway geometrics and traffic controls will remain in place with one exception. It is anticipated that the existing driveway for Toyota of Selma will be shifted to the west as the Selma Grove development continues to be developed. Figure 10 illustrates the location of the Near Term Projects and their combined trip assignment to the study intersections and study segment under this scenario. Figure 11 illustrates the assumed intersection geometrics and traffic controls for these intersections under this scenario.

Traffic Signal Warrants

Warrant 3 was prepared for the unsignalized intersections under the Cumulative Year 2046 plus Project Traffic Conditions scenario. These warrants are contained in Appendix J. Under this scenario, the intersections of DeWolf Avenue at Floral Avenue, Future North-South Road at Floral Avenue and Highland Avenue at Rose Avenue are projected to satisfy Warrant 3 during one or both peak periods. Based on the traffic signal warrants, operational analysis and engineering judgement, it is recommended that the City consider implementing traffic signal controls at the intersections of Future North-South Road at Floral Avenue and Highland Avenue at Rose Avenue.

Results of Cumulative Year 2046 plus Project Level of Service Analysis

Figure 11 illustrates the Cumulative Year 2046 Plus Project turning movement volumes, intersection geometrics and traffic controls. LOS worksheets for the Cumulative Year 2046 Plus Project Traffic Conditions scenario are provided in Appendix I. Table XIII presents a summary of the Cumulative Year 2046 Plus Project peak hour LOS at the study intersections.

Under this scenario, the intersections of Highland Avenue at Golden State Boulevard, DeWolf Avenue at Floral Avenue, Future North-South Road at Floral Avenue, Walmart Main Driveway at Floral Avenue, SR 99 Southbound Off-Ramp at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during one or both peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at these intersections. Additional improvements are recommended to the intersection of SR 99 Northbound Off-Ramp at Floral Avenue in order to address queuing issues at this intersection. Three different alternatives were provided for the improvement at the intersection of Future North-South Road at Floral Avenue for the City's consideration.

- Highland Avenue / Golden State Boulevard
  - Add a southbound left-turn lane;
  - Modify southbound left-through lane to a through-right lane;
  - Remove the southbound right-turn lane; and
  - Modify the phasing scheme to protective left-turn phasing in all directions.
- DeWolf Avenue / Floral Avenue
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Modify the intersection control to an all-way stop.
- Future North-South Road / Floral Avenue
  - Alternative 1 – Traffic Signal
    - Modify the eastbound through-right lane to a through lane;
    - Add an eastbound through lane with a receiving lane east of Future North-South Road;
    - Add an eastbound right-turn lane;
    - Add a westbound through with a receiving lane west of Future North-South Road; and
    - Signalize the intersection with permissive phasing in the east-west direction and protected left-turn phasing in the north-south direction.
  - Alternative 2 – Roundabout
    - Install a roundabout with two lanes on the east and west legs and a single lane on the south leg.
    - As queuing from the intersection of Walmart Main Driveway at Floral Avenue is projected to back into this intersection, a roundabout will not function properly at this location. Therefore, this alternative has been determined to not be viable and has been omitted from the LOS table and conclusion as a result.
  - Alternative 3 – One-Way Stop
    - Add an eastbound through lane with a receiving lane east of Future North-South Road;
    - Add an eastbound right-turn lane; and
    - Add a westbound through lane with a receiving lane west of Future North-South Road.
    - As Alternative 3 did not perform within the LOS threshold during the PM peak period, this alternative was omitted from the LOS table and conclusion.
- Walmart Main Driveway / Floral Avenue
  - Restripe the southbound through-right lane to a left-through-right lane; and
  - Modify the phasing scheme to split phasing in the north and south directions and protective left-turn phasing in the east and west directions.
- SR 99 Southbound Off-Ramp / Floral Avenue
  - Restripe the southbound through lane to a through-right lane.
- Highland Avenue / Floral Avenue
  - Add a second eastbound left-turn lane;
  - Add a westbound right-turn lane; and
  - Modify the phasing scheme to include overlap phases for the southbound right-turn with the eastbound left turn and the eastbound right-turn with the northbound left turn.

- SR 99 Northbound Off-Ramp / Floral Avenue
  - Remove the northbound right-turn lane; and
  - Add a northbound left-right lane.
- Highland Avenue / Rose Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Signalize the intersection with protective left-turn phasing in all directions.

Table XIII: Cumulative Year 2046 Plus Project Intersection LOS Results

ID	*Intersection*	*Intersection Control*	*AM (7 - 9) Peak Hour*		*PM (4 - 6) Peak Hour*	
			Average Delay (sec/veh)	*LOS*	*Average Delay (sec/veh)*	*LOS*
1	Highland Avenue / Golden State Boulevard	Traffic Signal	36.9	D	**77.6**	**E**
		Improved (Traffic Signal)	34.8	C	44.2	D
2	DeWolf Avenue / Floral Avenue	Two-Way Stop	13.0	B	**110.8**	**F**
		Improved (All-Way Stop)	8.9	A	18.4	C
3	Future North-South Road / Floral Avenue	One-Way Stop	28.1	D	**>120.0**	**F**
		Improved (Traffic Signal)	5.0	A	5.1	A
4	Walmart Main Driveway / Floral Avenue	Traffic Signal	30.0	C	**79.2**	**E**
		Improved (Traffic Signal)	24.1	C	40.8	D
5	Eastern Driveway / Floral Avenue	Two-Way Stop	12.7	B	24.0	C
6	SR 99 Southbound Off-Ramp / Floral Avenue	Traffic Signal	20.6	C	**71.4**	**E**
		Improved (Traffic Signal)	20.8	C	35.8	D
7	Highland Avenue / Floral Avenue	Traffic Signal	37.2	D	**106.9**	**F**
		Improved (Traffic Signal)	30.2	C	48.5	D
8	SR 99 Northbound Off-Ramp / Floral Avenue	Traffic Signal	20.3	C	18.0	B
		Improved (Traffic Signal)	18.1	B	17.6	B
9	Whitson Street / Floral Avenue	Traffic Signal	24.8	C	33.7	C
10	Highland Avenue / SR 99 Southbound Ramps	Traffic Signal	15.4	B	21.6	B
11	Southern Driveway / Stillman Street	Two-Way Stop	10.0	B	11.5	B
12	Highland Avenue / Stillman Street	Traffic Signal	21.5	C	49.8	D
13	Highland Avenue / Rose Avenue	Two-Way Stop	**115.9**	**F**	**>120.0**	**F**
		Improved (Traffic Signal)	18.4	B	28.0	C

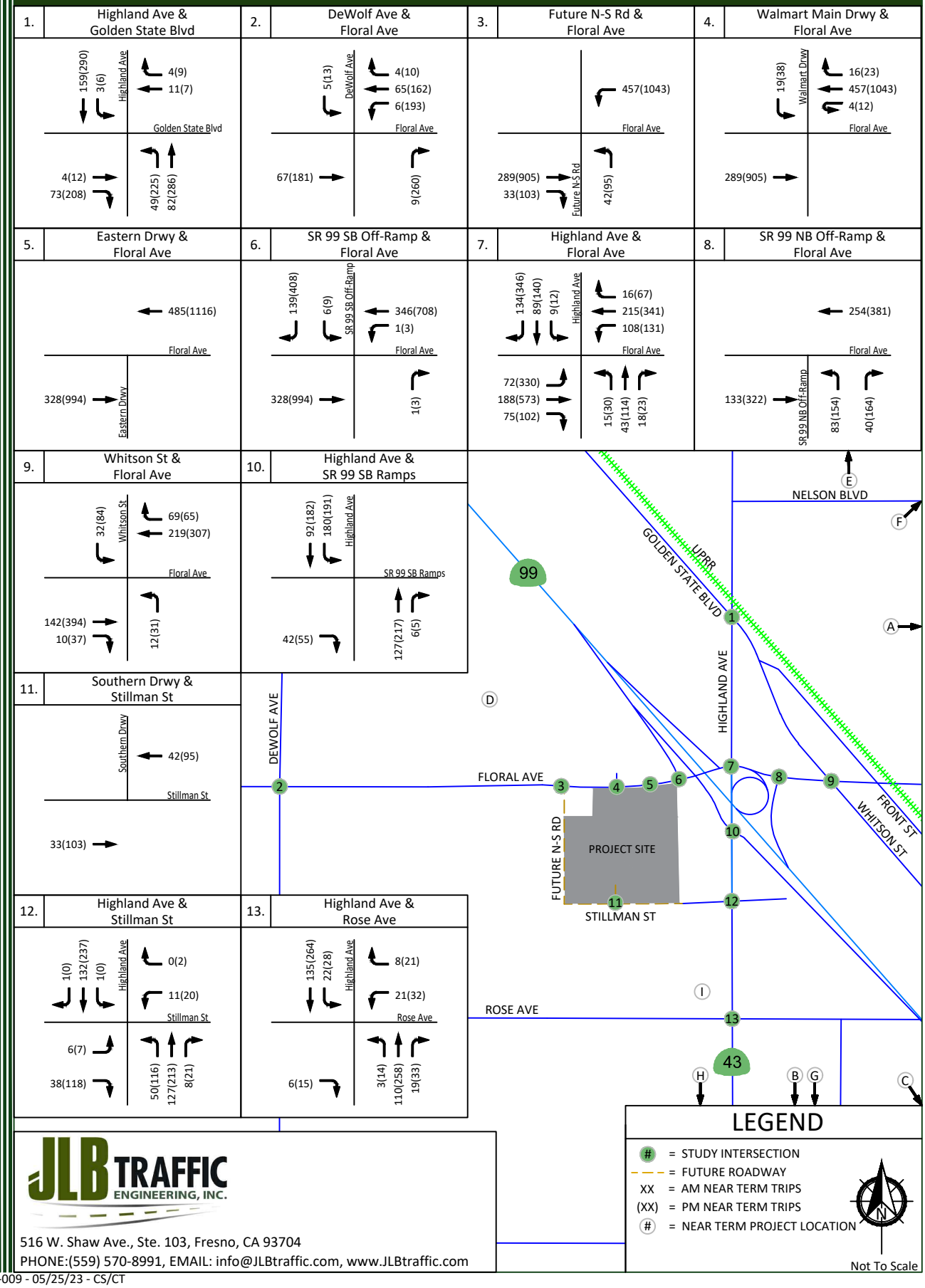
Note: LOS = Level of Service based on average delay on signalized intersections and All-Way STOP Controls
LOS for two-way and one-way STOP controlled intersections are based on the worst approach/movement of the minor street.

Project Only Trip Assignment to State Facilities

Figure 12 illustrates the Project Only Trips to State Route 99 at the Floral Avenue-Highland Avenue interchange.

Casitas Selma - City of Selma
2046 Near Term Projects' Trip Assignment

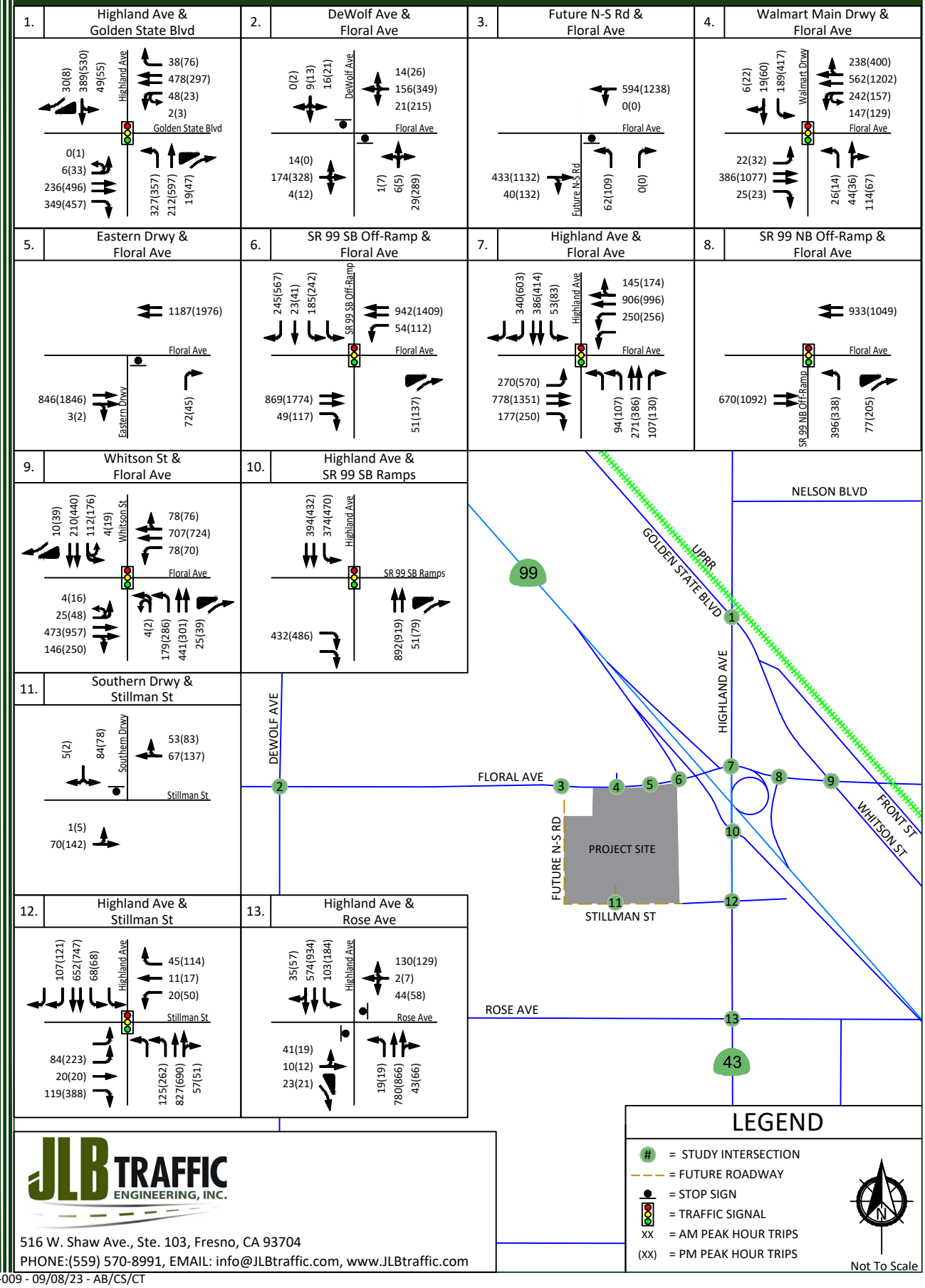
Figure 10



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Casitas Selma - City of Selma
Cumulative Year 2046 plus Project - Traffic Volumes, Geometrics and Controls

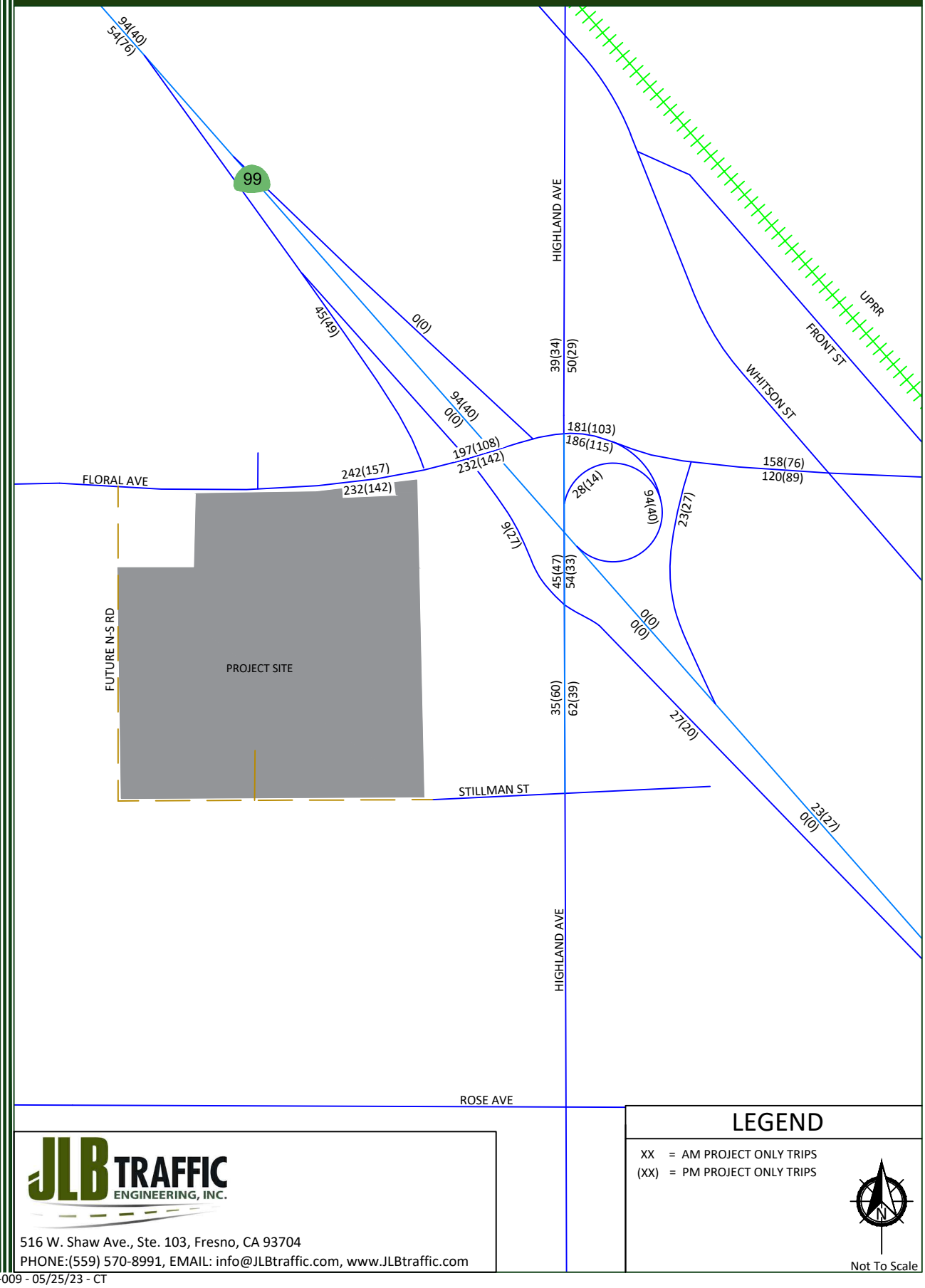
Figure 11



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Casitas Selma - City of Selma
State Route 99 at Floral Avenue and Highland Avenue Interchanges - Project Only Trips

Figure 12



LEGEND

XX = AM PROJECT ONLY TRIPS
(XX) = PM PROJECT ONLY TRIPS

Not To Scale

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Queuing Analysis

Table XIV provides a queue length summary for left-turn and right-turn lanes at the study intersections under all study scenarios. The queuing analyses for the study intersections are contained in the LOS worksheets for the respective scenarios. Appendix D contains the methodologies used to evaluate these intersections. Queuing analyses were completed using SimTraffic output information. SimTraffic output information can change each time the simulation is ran. Synchro provides both 50th and 95th percentile maximum queue lengths (in feet). According to the Synchro manual, "the 50th percentile maximum queue is the maximum back of queue on a typical cycle and the 95th percentile queue is the maximum back of queue with 95th percentile volumes" (*Synchro Studio 11 User Guide* 2020). The queues shown on Table XIV are the 95th percentile queue lengths for the respective lane movements.

The *California Highway Design Manual* (CA HDM) provides guidance for determining deceleration lengths for the left-turn and right-turn lanes based on design speeds. According to the CA HDM, tapers for right-turn lanes are "usually unnecessary since main line traffic need not be shifted laterally to provide space for the right-turn lane. If, in rare instances, a lateral shift were needed, the approach taper would use the same formula as for a left-turn lane" (Caltrans 2019). Therefore, a bay taper length pursuant to the CA HDM would need to be added, as necessary, to the recommended storage lengths presented in Table XIV.

The storage capacity for the Cumulative Year 2046 plus Project Traffic Conditions shall be based on the SimTraffic output files and engineering judgement. The values in bold presented in Table XIV are the projected queue lengths that will likely need to be accommodated by the Cumulative Year 2046 plus Project Traffic Conditions scenario. At the remaining approaches of the study intersections, the existing storage capacity will be sufficient to accommodate the maximum queue. It is recommended that the westbound left-turn lane storage length at the intersection of Walmart Main Driveway at Floral Avenue be extended as far east as possible (between 340 and 480 feet) while taking design constraints into consideration. In order to extend this westbound left-turn lane, the eastbound left-turn lane to the east of it will need to be removed.

Table XIV: Queuing Analysis

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 No Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Highland Avenue / Golden State Boulevard	Eastbound Left	200	3	18	2	23	9	28	0	22	4	27
		Eastbound Through	>500	41	50	33	69	37	75	62	251	50	164
		Eastbound Through	>500	21	37	22	66	21	84	59	333	76	226
		Eastbound Right	70	24	53	30	53	56	86	140	**204**	127	191
		Westbound Left	75	2	3	4	0	11	6	28	27	29	7
		Westbound Through	>500	16	10	18	8	32	2	99	66	103	51
		Westbound Through	>500	21	28	22	12	24	16	92	70	114	67
		Westbound Right	120	0	0	0	8	0	9	0	2	0	0
		Northbound Left	250	62	63	99	92	131	201	294	**399**	346	356
		Northbound Through	>500	75	134	89	186	145	356	245	519	338	431
		Northbound Right	80	0	0	0	38	0	83	64	46	33	**104**
		Southbound Left	*	*	*	*	*	*	*	217	**269**	146	241
		Southbound Through-Left	>500	233	203	203	204	221	383	*	*	*	*
		Southbound Through-Right	*	*	*	*	*	*	*	485	1467	388	795
		Southbound Right	50	57	56	80	48	72	61	*	*	*	*
2	DeWolf Avenue / Floral Avenue	Eastbound Left-Through-Right	>500	0	0	0	0	0	0	60	77	59	98
		Westbound Left-Through-Right	>500	0	15	14	17	14	50	*	*	*	*
		Westbound Left	*	*	*	*	*	*	*	34	63	40	**71**
		Westbound Through-Right	*	*	*	*	*	*	*	60	72	52	72
		Northbound Left-Through-Right	>500	29	41	37	40	39	53	32	105	39	86
		Southbound Left-Through-Right	>500	32	28	31	27	33	30	31	41	32	50
3	Future North-South Road / Floral Avenue	Eastbound Left-Through	>500	0	10	*	*	46	82	*	*	*	*
		Eastbound Left-Through-Right	*	*	*	25	10	*	*	*	*	*	*
		Eastbound Through	*	*	*	*	*	63	67	*	*	78	868
		Eastbound Through	*	*	*	*	*	*	*	*	*	65	894
		Eastbound Right	*	*	*	*	*	28	63	*	*	35	**483**
		Westbound Left-Through	*	*	*	*	*	77	198	*	*	119	437
		Westbound Left-Though-Right	*	*	*	0	0	*	*	*	*	*	*
		Westbound Through	*	*	*	*	*	*	*	*	*	77	381
		Westbound Through-Right	>500	0	0	*	*	59	157	*	*	*	*
		Northbound Left	*	*	*	41	35	34	36	*	*	*	**91**
		Northbound Through-Right	*	*	*	0	0	0	0	*	*	47	0
		Southbound Left-Right	>500	35	45	*	*	*	*	*	*	*	*
		Southbound Left-Through-Right	*	*	*	39	46	39	45	*	*	*	*

Note: * = Does not exist or is not projected to exist

Table XIV: Queuing Analysis (Continued)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 No Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
4	Walmart Main Driveway / Floral Avenue	Eastbound Left	100	32	51	51	53	48	94	31	154	54	**184**
		Eastbound Through	>500	49	72	61	126	121	207	115	877	156	816
		Eastbound Through	>500	45	81	59	97	109	210	103	886	144	800
		Eastbound Right	*	*	*	48	21	37	78	*	*	46	**151**
		Westbound Left	120	110	94	218	213	234	223	112	241	285	**478**
		Westbound Through	>500	55	123	245	314	398	389	174	737	211	565
		Westbound Through-Right	>500	85	147	127	252	247	327	131	773	261	540
		Northbound Left	*	*	*	54	40	47	35	*	*	**46**	34
		Northbound Through-Right	*	*	*	69	85	127	103	*	*	100	105
		Southbound Left	100	92	169	148	215	197	236	63	**236**	84	225
		Southbound Left-Through-Right	*	*	*	*	*	*	*	*	*	140	312
		Southbound Left-Right	*	*	*	*	*	*	*	104	467	*	*
		Southbound Through-Right	*	*	*	55	363	158	369	*	*	*	*
		Southbound Right	>300	19	35	*	*	*	*	*	*	*	*
5	Eastern Driveway / Floral Avenue	Eastbound Through	*	*	*	0	278	0	228	*	*	0	488
		Eastbound Through-Right	*	*	*	0	293	0	250	*	*	10	491
		Westbound Through	*	*	*	0	22	40	47	*	*	0	294
		Westbound Through	*	*	*	0	12	0	0	*	*	0	268
		Northbound Right	*	*	*	57	82	65	55	*	*	62	**81**
6	State Route 99 Southbound Off-Ramp / Floral Avenue	Eastbound Through	>400	101	456	112	275	142	304	140	831	184	272
		Eastbound Through	>400	87	483	127	281	167	313	162	829	221	285
		Eastbound Right	100	33	175	35	112	83	174	63	**195**	94	192
		Westbound Left	200	68	120	76	173	87	180	78	302	79	**303**
		Westbound Through	>500	114	161	156	182	93	286	201	514	218	402
		Westbound Through	>500	101	170	126	135	91	283	178	453	211	311
		Northbound Right	>100	23	67	36	105	34	92	45	145	33	123
		Southbound Dual Lefts	380	80	123	110	186	105	184	108	159	118	146
		Southbound Through	>500	26	41	51	76	34	79	*	*	*	*
		Southbound Through-Right	*	*	*	*	*	*	*	96	232	114	330
		Southbound Right	380	50	61	58	86	81	198	44	203	81	313

Note: * = Does not exist or is not projected to exist

Table XIV: Queuing Analysis (Continued)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 No Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
7	Highland Avenue (State Route 43) / Floral Avenue	Eastbound Left	100	168	176	170	173	*	*	*	*	*	*
		Eastbound Dual Lefts	*	*	*	*	*	254	261	152	262	189	**288**
		Eastbound Through	>500	200	602	309	591	313	612	232	648	298	595
		Eastbound Through	>500	167	621	281	630	276	629	249	664	356	676
		Eastbound Right	60	91	159	108	136	138	159	161	160	172	**217**
		Westbound Dual Lefts	150	99	90	133	155	194	220	211	**278**	218	269
		Westbound Through	>500	181	185	235	322	335	444	277	565	425	618
		Westbound Through	*	*	*	*	*	*	*	238	524	391	625
		Westbound Through-Right	>500	188	203	248	342	346	439	*	*	*	*
		Westbound Right	*	*	*	*	*	*	*	62	421	230	**465**
		Northbound Dual Lefts	170	70	96	65	126	59	136	177	**306**	101	145
		Northbound Through	>500	147	188	149	220	178	308	327	570	226	288
		Northbound Through	>500	0	69	74	181	83	277	256	517	207	234
		Northbound Right	80	55	96	71	107	71	123	93	**145**	120	122
		Southbound Left	100	64	97	73	153	83	145	157	**181**	96	142
		Southbound Through	>500	123	169	163	223	161	220	254	262	199	243
		Southbound Through	>500	80	95	101	118	136	131	200	197	201	155
		Southbound Dual Right	200	62	70	82	81	99	116	97	**216**	108	157
8	State Route 99 Northbound Off-Ramp / Floral Avenue	Eastbound Through	>500	71	113	86	137	122	200	139	208	85	218
		Eastbound Through	>500	94	153	105	157	153	219	167	230	109	229
		Westbound Through	>500	86	102	137	130	175	188	192	323	225	710
		Westbound Through	>500	82	94	107	128	151	159	132	291	191	702
		Northbound Left	>500	112	79	153	199	221	271	152	305	281	372
		Northbound Left-Right	*	*	*	*	*	*	*	182	389	312	477
		Northbound Right	40	79	75	83	85	89	90	*	*	*	*

Note: * = Does not exist or is not projected to exist

Table XIV: Queuing Analysis (Continued)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 No Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
9	Whitson Street / Floral Avenue	Eastbound Left	80	6	93	20	81	11	53	63	**185**	16	136
		Eastbound Through	>500	56	174	98	286	154	313	129	463	142	507
		Eastbound Through-Right	>500	80	238	132	329	187	338	166	504	181	544
		Westbound Left	100	56	65	67	70	116	55	118	154	**170**	165
		Westbound Through	>500	59	111	101	116	142	116	176	202	290	309
		Westbound Through-Right	>500	63	87	86	114	129	119	191	214	208	305
		Northbound Dual Lefts	120	40	88	48	102	48	174	52	135	66	**225**
		Northbound Through	>500	42	54	34	52	46	130	146	122	163	320
		Northbound Through	>500	0	69	59	77	51	82	154	130	176	157
		Northbound Right	70	0	0	0	0	0	0	44	43	**81**	65
		Southbound Left	130	55	126	60	108	85	108	122	**171**	95	169
		Southbound Through	>500	36	90	52	89	58	91	89	214	89	177
		Southbound Through	>500	57	105	57	109	59	99	100	238	106	201
		Southbound Right	70	0	0	0	0	0	0	0	81	0	**118**
10	Highland Avenue (State Route43) / State Route 99 Southbound Ramps	Eastbound Dual Rights	175	98	93	143	172	147	114	142	120	143	**284**
		Northbound Through	>500	143	112	97	208	163	183	229	229	203	297
		Northbound Through	>500	154	104	106	151	157	184	229	214	199	274
		Northbound Right	300	0	0	0	0	0	0	0	0	0	0
		Southbound Left	65	153	156	183	207	210	227	224	210	230	**231**
		Southbound Through	>500	94	102	93	213	182	321	339	425	280	269
		Southbound Through	>500	79	73	108	107	108	138	215	187	215	108
11	Southern Main Access Road / Stillman Street	Eastbound Left-Through	*	*	*	*	0	0	0	10	*	*	0	23
		Westbound Through-Right	*	*	*	*	0	0	0	0	*	*	0	0
		Southbound Left-Right	*	*	*	*	51	51	60	54	*	*	62	54

Note: * = Does not exist or is not projected to exist

Table XIV: Queuing Analysis (Continued)

ID	Intersection	Existing Queue Storage Length (ft.)		Existing		Existing plus Project		Near Term plus Project		Cumulative Year 2046 No Project		Cumulative Year 2046 plus Project	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12	Highland Avenue (State Route 43) / Stillman Street	Eastbound Dual Lefts	75	20	94	83	125	92	135	21	131	71	**140**
		Eastbound Through	>500	6	43	33	150	42	273	19	235	44	279
		Eastbound Right	100	28	61	45	145	51	221	27	202	75	**249**
		Westbound Left	100	31	59	36	59	44	82	39	80	48	**104**
		Westbound Through	>500	18	20	53	47	51	45	25	32	49	56
		Westbound Right	>500	55	75	46	62	63	76	70	68	57	81
		Northbound Dual Lefts	300	43	90	82	107	70	207	39	100	111	**478**
		Northbound Through	>500	178	170	185	191	248	272	316	287	344	824
		Northbound Through-Right	>500	189	189	209	228	276	295	334	309	379	528
		Southbound Dual Lefts	320	42	56	60	49	56	57	66	61	72	66
		Southbound Through	>500	116	156	220	176	223	211	221	308	269	283
		Southbound Through	>500	127	161	234	177	283	236	247	307	294	274
		Southbound Dual Rights	320	39	41	25	43	32	37	44	18	42	29
13	Highland Avenue (State Route 43) / Rose Avenue	Eastbound Left	*	11	16	12	18	8	16	66	42	**68**	55
		Eastbound Left-Through	>500	*	*	*	*	*	*	*	*	*	*
		Eastbound Through-Right	*	21	26	21	27	34	33	55	48	67	47
		Eastbound Right	25	*	*	*	*	*	*	*	*	*	*
		Westbound Left	*	60	45	44	60	72	91	79	82	69	**83**
		Westbound Left-Through-Right	>500	*	*	*	*	*	*	*	*	*	*
		Westbound Through-Right	*	82	67	74	71	79	78	79	73	101	86
		Northbound Left	250	13	16	10	28	22	44	45	74	56	61
		Northbound Through	>500	142	149	166	188	153	185	156	217	233	239
		Northbound Through-Right	>500	142	134	164	185	170	187	169	214	240	219
		Southbound Left	250	100	148	182	245	167	207	103	298	145	**338**
		Southbound Through	>500	105	190	131	196	106	189	136	276	206	341
		Southbound Through-Right	>500	124	201	175	183	128	204	170	284	260	298

Note: * = Does not exist or is not projected to exist

Project's Equitable Fair Share

The Project's fair share percentage impact to study intersections projected to fall below their LOS threshold and which are not covered by an existing impact fee program is provided in Table XV. The Project's fair share percentage impacts were calculated pursuant to the Caltrans Guide for the preparation of Traffic Impact Studies. The Project's pro-rata fair shares were calculated utilizing the Existing volumes, Project Only Trips and Cumulative Year 2046 plus Project volumes. Figure 2 illustrates the Existing traffic volumes, Figure 4 illustrates the Project Only Trips and Figure 11 illustrates the Cumulative Year 2046 plus Project volumes. Since the critical peak period for the study facilities was determined to be during the PM peak, the PM peak volumes are utilized to determine the Project's pro-rata fair share.

It is recommended that the Project contribute its equitable fair share as listed in Table XV for the future improvements necessary to maintain an acceptable LOS. However, fair share contributions should only be made for those facilities or portion thereof currently not funded by the responsible agencies roadway impact fee program(s) or grant funding, as appropriate. For those improvements not presently covered by local and regional roadway impact fee programs or grant funding, it is recommended that the Project contribute its equitable fair share. Payment of the Project's equitable fair share in addition to the local and regional impact fee programs would satisfy the Project's traffic improvement measures.

This study does not provide construction costs for the recommended improvement measures; therefore, if the recommended improvement measures are implemented, it is recommended that the developer work with the City of Selma to develop the construction cost estimate(s).

Table XV: Project's Equitable Fair Share

ID	*Intersection*	*Existing Traffic Volumes (PM Peak)*	*Cumulative Year 2046 plus Project Traffic Volumes (PM Peak)*	*Project Only Trips Traffic Volumes (PM Peak)*	*Project's Fair Share (%)*
1	Highland Avenue / Golden State Boulevard	1,402	2,980	53	3.36%
2	DeWolf Avenue / Floral Avenue	382	1,267	54	6.10%
3	Future North-South Road / Floral Avenue	416	2,611	54	2.46%
4	Walmart Main Driveway / Floral Avenue	1,340	3,636	304	13.24%
6	SR 99 Southbound Off-Ramp / Floral Avenue	2,060	4,399	299	12.78%
7	Highland Avenue / Floral Avenue	2,824	5,320	299	11.98%
8	SR 99 Northbound Off-Ramp / Floral Avenue	1,471	2,684	192	15.83%
13	Highland Avenue / Rose Avenue	1,610	2,372	34	4.46%

Note: Project Fair Share = ((Project Only Trips) / (Year 2046 plus Project Traffic Volumes – Existing Traffic Volumes)) * 100

Conclusions and Recommendations

Conclusions and recommendations regarding the proposed Project are presented below.

Existing Traffic Conditions

- At present, the intersection of Highland Avenue at Rose Avenue exceeds its LOS threshold during the PM peak period. All other study intersections currently operate at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection.
  - Highland Avenue / Rose Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.

Existing plus Project Traffic Conditions

- At buildout and before any internal capture is considered, the Project is estimated to generate 10,786 daily trips, 784 AM peak hour trips and 889 PM peak hour trips.
- Due to the mix of land uses within the Project, it is anticipated that 1,555 daily trips, 98 AM peak hour trips and 322 PM peak hours trips will stay within the confines of the Project.
- At buildout and after internal capture, the Project is estimated to generate 9,231 daily trips, 686 AM peak hour trips and 567 PM peak hour trips.
- Compared to the analyzed project site plan, the Project is estimated to generate 77 less daily trips, 65 less AM peak hour trips and 7 more PM peak hour trips. Given that the PM peak is the only peak that is estimated to generate more traffic and that it only generates 7 more peak hour trips than originally analyzed. This miniscule increase in traffic during the PM peak is not projected to result in changes to the LOS, queuing or recommendations presented within this report. As such, it is JLB's opinion that this analysis effectively analyzes the latest Project site plan.
- JLB analyzed the location of the existing and proposed roadways and access points. After initial comments were addressed to internal circulation and driveway location, all access points are located at points that minimize traffic operational impacts to existing and future roadway networks in the latest site plan.
- The intersection of the Future North-South Road at Floral Avenue should be constructed with a single left-through-right lane on the east, west and north legs and a left-turn lane and a through-right lane on the south leg. This intersection will be controlled by a two-way stop on the north and south legs.
- It is recommended that the Project implement ADA compliant pedestrian sidewalks along all internal streets connecting all uses to external sidewalks and along the Project's frontage to Floral Avenue, Future North-South Road and Stillman Street.
- It is recommended that the Project retain the Class II Bikeway along its frontage to Floral Avenue, consistent with the Selma ATP. It is further recommended that a Class II Bikeway be implemented along the Project's frontage to the Future North-South Road.

- The City of Selma and Caltrans should collaborate on a future analysis of pedestrian and bicycle facilities through the State Route 99 at Floral Avenue interchange and seek funding sources for the reconstruction of this interchange to promote alternate modes of transportation.
- Under this scenario, the intersection of Highland Avenue at Rose Avenue is projected to exceed its LOS threshold during the PM peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection.
  - Highland Avenue / Rose Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.

Near Term plus Project Traffic Conditions

- The total trip generation for the Near Term Projects under this scenario is 52,746 daily trips, 2,022 AM peak hour trips and 3,985 PM peak hour trips.
- Under this scenario, the intersections of Future North-South Road at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during the PM peak period. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection.
  - Future North-South Road / Floral Avenue
    - Modify the eastbound left-through-right lane to a left-through lane;
    - Add an eastbound through lane with a receiving lane east of Future North-South Road;
    - Add an eastbound right-turn lane;
    - Modify the westbound left-through-right lane to a left-through lane; and
    - Add a westbound through-right lane with a receiving lane west of Future North-South Road.
  - Highland Avenue / Floral Avenue
    - Add a second eastbound left-turn lane; and
    - Modify the traffic signal to accommodate the added lane.
  - Highland Avenue / Rose Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.

Cumulative Year 2046 No Project Traffic Conditions

- Under this scenario, the intersections of Highland Avenue at Golden State Boulevard, DeWolf Avenue at Floral Avenue, SR 99 Southbound Off-Ramp at Floral Avenue, Highland Avenue at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during one or both peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at this intersection. Additional improvements are recommended to the intersections of Walmart Main Driveway at Floral Avenue and SR 99 Northbound Off-Ramp at Floral Avenue in order to address queuing issues at these intersections.
  - Highland Avenue / Golden State Boulevard
    - Add a southbound left-turn lane;
    - Modify southbound left-through lane to a through-right lane;
    - Remove the southbound right-turn lane; and
    - Modify the phasing scheme to protective left-turn phasing in all directions.
  - DeWolf Avenue / Floral Avenue
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Modify the intersection control to an all-way stop.
  - Walmart Main Driveway / Floral Avenue
    - Restripe the southbound right-turn lane to a left-right lane.
  - SR 99 Southbound Off-Ramp / Floral Avenue
    - Restripe the southbound through lane to a through-right lane.
  - Highland Avenue / Floral Avenue
    - Add a second eastbound left-turn lane;
    - Add a westbound right-turn lane; and
    - Modify the phasing scheme to include overlap phases for the southbound right-turn with the eastbound left turn and the eastbound right-turn with the northbound left turn.
  - SR 99 Northbound Off-Ramp / Floral Avenue
    - Remove the northbound right-turn lane; and
    - Add a northbound left-right lane.
  - Highland Avenue / Rose Avenue
    - Add an eastbound left-turn lane;
    - Modify the eastbound left-through lane to a through-right lane;
    - Remove the eastbound right-turn lane;
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Signalize the intersection with protective left-turn phasing in all directions.

Cumulative Year 2046 plus Project Traffic Conditions

- Under this scenario, the intersections of Highland Avenue at Golden State Boulevard, DeWolf Avenue at Floral Avenue, Future North-South Road at Floral Avenue, Walmart Main Driveway at Floral Avenue and Highland Avenue at Rose Avenue are projected to exceed their LOS threshold during one or both peak periods. All other study intersections are projected to continue operating at an acceptable LOS during both peak periods. The following improvements are recommended to improve the LOS at these intersections. Additional improvements are recommended to the intersection of SR 99 Southbound Off-Ramp at Floral Avenue in order to address queuing issues at this intersection.
  - Highland Avenue / Golden State Boulevard
    - Add a southbound left-turn lane;
    - Modify southbound left-through lane to a through-right lane;
    - Remove the southbound right-turn lane; and
    - Modify the phasing scheme to protective left-turn phasing in all directions.
  - DeWolf Avenue / Floral Avenue
    - Add a westbound left-turn lane;
    - Modify the westbound left-through-right lane to a through-right lane; and
    - Modify the intersection control to an all-way stop.
  - Future North-South Road / Floral Avenue
    - Modify the eastbound through-right lane to a through lane;
    - Add an eastbound through lane with a receiving lane east of Future North-South Road;
    - Add an eastbound right-turn lane; and
    - Add a westbound through with a receiving lane west of Future North-South Road.
    - Signalize the intersection with permissive phasing in the east-west direction and protected left-turn phasing in the north-south direction.
  - Walmart main Driveway / Floral Avenue
    - Restripe the southbound through-right lane to a left-through-right lane; and
    - Modify the phasing scheme to split phasing in the north and south directions and protective left-turn phasing in the east and west directions.
  - SR 99 Southbound Off-Ramp / Floral Avenue
    - Restripe the southbound through lane to a through-right lane.
  - Highland Avenue / Floral Avenue
    - Add a second eastbound left-turn lane;
    - Add a westbound right-turn lane; and
    - Modify the phasing scheme to include overlap phases for the southbound right-turn with the eastbound left turn and the eastbound right-turn with the northbound left turn.

- SR 99 Northbound Off-Ramp / Floral Avenue
  - Remove the northbound right-turn lane; and
  - Add a northbound left-right lane.
- Highland Avenue / Rose Avenue
  - Add an eastbound left-turn lane;
  - Modify the eastbound left-through lane to a through-right lane;
  - Remove the eastbound right-turn lane;
  - Add a westbound left-turn lane;
  - Modify the westbound left-through-right lane to a through-right lane; and
  - Signalize the intersection with protective left-turn phasing in all directions.

Queuing Analysis

- It is recommended that the City consider left-turn and right-turn lane storage lengths as indicated in the Queuing Analysis.

Project's Equitable Fair Share

- It is recommended that the Project contribute its equitable fair share as listed in Table XV for the future improvements necessary to maintain an acceptable LOS.

Study Participants

JLB Traffic Engineering, Inc. Personnel:

Jose Luis Benavides, PE, TE	Project Manager
Matthew Arndt, EIT	Engineer I/II
Dennis Wynn	Sr. Engineering Technician
Carlos Topete	Engineering Aide
Adrian Benavides	Engineering Aide

Persons Consulted:

Edward Kashian	Lance-Kashian & Company
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Trevor Stearns	City of Selma
Hector Luna	Fresno County
David Padilla	Caltrans
Edgar Hernandez	Caltrans
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Appendix A: Scope of Work

October 25, 2022

Brandon Broussard
City of Selma, Engineering
1710 Tucker St
Selma, CA 93662

Via Email Only: engineering@cityofselma.com

Subject: ***Proposed Scope of Work for the Preparation of a Traffic Impact Analysis and Vehicle Miles Traveled Analysis for the Selma Development in the City of Selma (JLB Project 001-009)***

Dear Mr. Broussard,

JLB Traffic Engineering, Inc. (JLB) hereby submits this Draft Scope of Work for the preparation of a **Traffic Impact Analysis (TIA)** and **Vehicle Miles Traveled Analysis (VMT)** for the proposed **Selma Development (Project)** located on the southwest quadrant of Highland Avenue and Floral Avenue in the City of Selma. The Project proposes to develop approximately 37.4 new acres with a mix of residential, commercial and park space. An aerial of the Project vicinity is shown in Exhibit A. The latest Project Site Plan is presented in Exhibit B.

The purpose of the TIA and VMT is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process. To evaluate the on-site and off-site traffic impacts of the proposed Project, JLB proposes the following Scope of Work.

Scope of Work

- JLB will obtain recent or schedule and conduct new traffic counts at the study facility(ies) when schools in the vicinity are in session. These counts will include pedestrians and vehicles.
- JLB will request a Fresno Council of Governments (Fresno COG) traffic forecast model run for the Project (Select Zone Analysis) which will include the Project and the streets to be analyzed. The Fresno COG traffic forecasting model will be used to forecast traffic volumes for the Base Year 2022 and Cumulative Year 2042 scenarios.
- JLB will evaluate onsite circulation and provide recommendations. Particular attention will be paid to conflicting traffic movements, location of local roadways to the major streets and onsite vehicular ingress and egress routes.
- JLB will perform a site visit to observe existing traffic conditions, especially during the AM and PM peak hours. Existing roadway conditions including speed limits, lane geometrics, turn prohibitions and traffic controls will be verified.
- JLB will conduct a qualitative safe route to school evaluation from the Project site to the K-12 school(s) which would most likely serve the Project on opening day.

- JLB will conduct an evaluation of the existing and planned circulation network to include, the study intersections, roadway segments, and agreed upon facilities.
- JLB will qualitatively analyze existing and planned transit routes in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned walkways in the vicinity of the Project.
- JLB will qualitatively analyze existing and planned bikeways in the vicinity of the Project.
- JLB will prepare CA MUTCD Warrant 3 "Peak Hour" for unsignalized study intersections under all study scenarios.
- JLB will forecast trip distribution based on turn count information and knowledge of the existing and planned circulation network in the vicinity of the Project.
- JLB will evaluate existing and forecasted levels of service (LOS) at the study intersection(s). JLB will use HCM 6th Edition or HCM 2000 methodologies (as appropriate) within Synchro to perform this analysis for the AM and PM peak hours. JLB will identify the causes of poor LOS.

Study Scenarios

1. Existing Traffic Conditions with needed improvements (if any);
2. Existing plus Project Traffic Conditions with proposed improvement measures (if any);
3. Near Term plus Project, plus Approved and Pending Developments Traffic Conditions with proposed improvement measures (if any); and
4. Cumulative Year 2042 No Project Traffic Conditions with proposed improvement measurements (if any).
5. Cumulative Year 2042 plus Project Traffic Conditions with proposed improvement measurements (if any).

Weekday peak hours to be analyzed (Tuesday, Wednesday or Thursday only)

1. 7 - 9 AM peak hour
2. 4 - 6 PM peak hour

Study Intersections

1. Golden State Boulevard / Highland Avenue
2. Floral Avenue / DeWolf Avenue
3. Floral Avenue / Walmart Main Driveway
4. Floral Avenue / State Route 99 Southbound Off Ramp
5. Floral Avenue / Highland Avenue (State Route 43)
6. Floral Avenue / State Route 99 Northbound Off Ramp
7. Floral Avenue / Whitson Street
8. State Route 99 Southbound Ramps / Highland Avenue (State Route 43)
9. Stillman Avenue / Southern Main Access Road (Future)
10. Stillman Avenue / Highland Avenue (State Route 43)
11. Rose Avenue / Highland Avenue (State Route 43)

Queuing analysis is included in the proposed Scope of Work for the study intersection(s) listed above under all study scenarios. This analysis will be utilized to recommend minimum storage lengths for left-turn and right-turn lanes at all study intersections.

Study Segments

1. None

Project Only Trip Assignment to State Facilities

1. State Route 99 at Floral Avenue and Highland Avenue Connections

Project Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for the proposed Project with trip generation rates for Strip Retail Plaza, Fast-Food Restaurant with Drive-Through Window, Hotel, Multifamily Housing, Senior Adult Housing, Affordable Housing and Public Park. At buildout, the proposed Project is estimated to generate a maximum of 11,650 daily, 909 AM peak hour and 923 PM peak hour trips.

Table I: Project Trip Generation

Land Use (ITE Code)	*Size*	*Unit*	*Daily*		*AM (7-9) Peak Hour*						*PM (4-6) Peak Hour*					
			Rate	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*	*Trip Rate*	*In %*	*Out %*	*In*	*Out*	*Total*
Strip Retail Plaza (<40k) (822)	24.000	k.s.f.	54.45	1,307	2.36	60	40	34	23	57	6.59	50	50	79	79	158
Fast-Food Restaurant with Drive-Through Window (934)	13.500	k.s.f.	467.48	6,311	44.60	51	49	307	295	602	33.03	52	48	232	214	446
Hotel (310)	100	Rooms	7.99	799	0.46	56	44	26	20	46	0.59	51	49	30	29	59
Multifamily Housing (Low Rise) Not Close to Transit (220)	300	d.u.	6.74	2,022	0.40	24	76	29	91	120	0.51	63	37	96	57	153
Senior Adult Housing - Multifamily (252)	150	d.u.	3.24	486	0.20	34	66	10	20	30	0.25	56	44	21	17	38
Affordable Housing - Income Limits (223)	150	d.u.	4.81	722	0.36	29	71	16	38	54	0.46	59	41	41	28	69
Public Park (411)	3.350	Acres	0.78	3	0.02	59	41	0	0	0	0.11	55	45	0	0	0
Total Project Trips				**11,650**				**422**	**487**	**909**				**499**	**424**	**923**

Note: k.s.f. = Thousand Square Feet
d.u. = Dwelling Units

Project Access

Access to and from the Project site at buildout will predominantly be from four (4) access points. Two access point will be on the south side of Floral Avenue approximately 200 feet and 675 feet west of the State Route 99 southbound off ramp and are proposed as right-in and right-out and full access, respectively. The other two (2) access point will be on the north side of Stillman Street approximately 1,275 feet and 1,875 feet west of Highland Avenue and are proposed as full access. Additional Project details can be found on Exhibit B.

Near Term Projects to be Included

Based on our local knowledge of the study area and consultation with City of Selma Planning Division staff, JLB proposes to include Near Term Projects in the vicinity of the proposed Project under the Near Term plus Project Traffic Conditions scenario. The Near-Term Projects proposed to be included in the Near Term plus Project Traffic Conditions scenario include:

Project Name	General Location
1. Canales	SEC Highland Avenue and Nebraska Avenue
2. Graham Commercial	NWC Highland Avenue and Rose Avenue
3. Amberwood	East of Orange Avenue-Mill-Ditch Road at Nelson Avenue
4. Selma Crossings	West of State Route 99 and Mountain View Avenue
5. V-5 Commercial	NEC McCall Avenue and Dinuba Avenue
6. Stillman/Cinema Apartments	NEC Cinema Way and Stillman Street
7. TT 5303	NEC Thompson Avenue and Saginaw Avenue
8. TT 6019	NEQ Highland Avenue and Dinuba Avenue
9. Selma Grove Commercial Development	NWQ State Route 99 and Floral Avenue

Other Near-Term Projects the City, County or Caltrans has knowledge and for which it is anticipated that said project(s) is/are projected to be whole or partially built by the Near-Term Project Year 2028, City, County and Caltrans, as appropriate, would provide JLB with project details such as a project description, location, proposed land uses with breakdowns and type of residential units and number of square footages for non-residential uses.

Vehicle Miles Traveled

On November 15, 2021, the City of Selma adopted the Fresno COG VMT Implementation Regional Guidelines and Technical Report, *Fresno County SB 743 Implementation Regional Guidelines*. The City's adopted thresholds for development projects correspond to the regional averages modeled by Fresno COG's ABM. For residential and non-residential (except retail) development projects, the adopted threshold of significance is a 13% reduction. For retail projects, the adopted threshold is no net increase in Regional VMT when compared to the existing Regional VMT. Therefore, the VMT threshold for the Proposed Project is as follows:

1. Retail Plaza and Fast-Food Restaurant – Net zero (0) increase in regional VMT
2. Hotel – Net zero (0) increase in VMT per service population (Population/Users + Employment)
3. Multifamily Housing and Senior Adult Housing – 14.01 VMT per capita (16.10 X (1.00 – 0.13) = 14.01)
4. Affordable Housing – The Affordable Housing component is assumed to be screened out based on the adopted Fresno COG VMT Guidelines
5. Public Park – The Public Park component is assumed to be screened out based on the adopted Fresno COG VMT Guidelines

The Scope of Work is based on our understanding of this Project and our experience with similar Reports. We kindly ask that all responsible agencies submit any comments by November 16, 2022. If you have any questions or require additional information, please contact me by phone at (559) 869-4514, or via email at cayala@jlbtraffic.com.

Sincerely,

Carlos Ayala

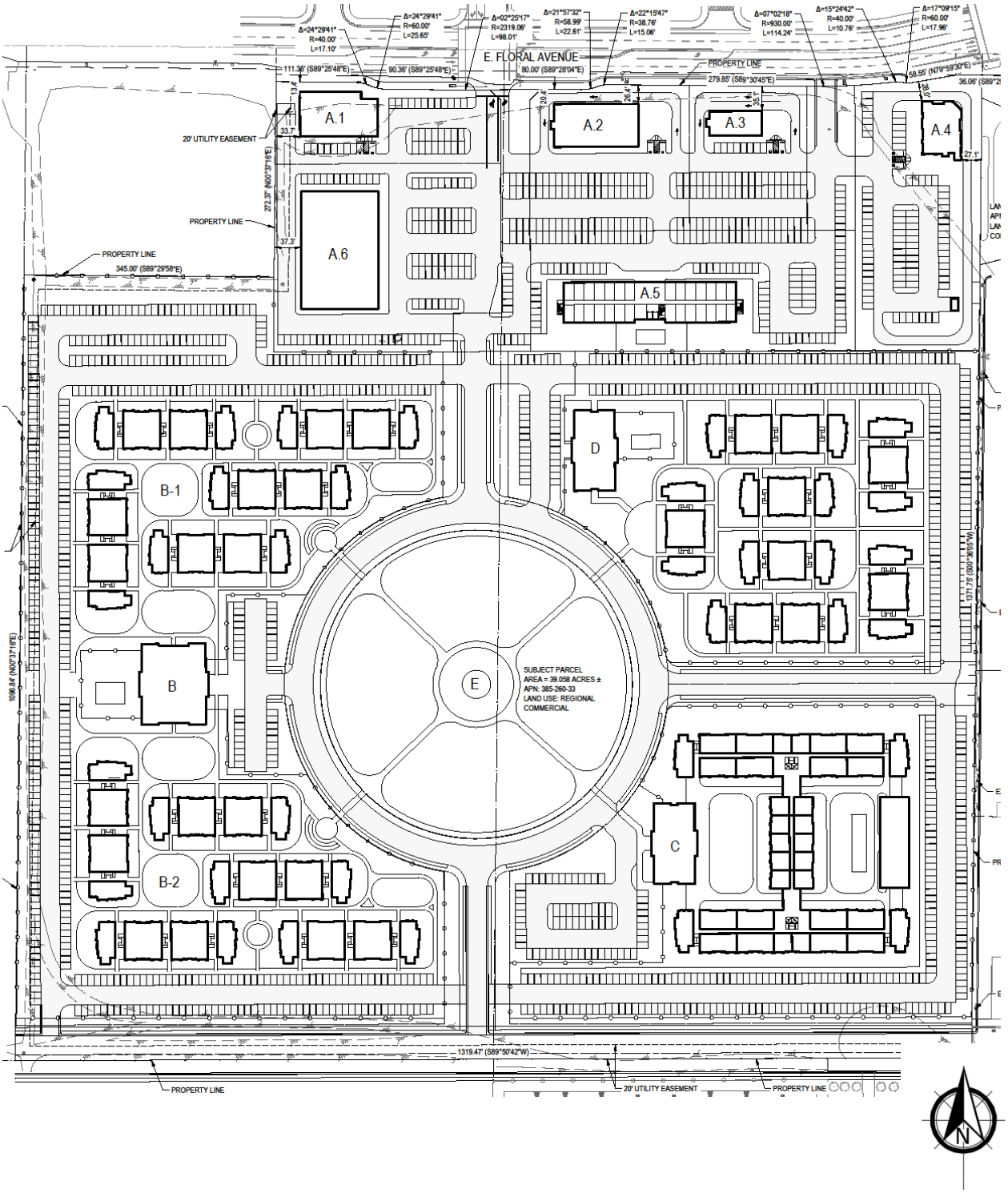
Carlos Ayala-Magana
JLB Traffic Engineering, Inc.

cc: Hector Luna, County of Fresno
David Padilla, Caltrans
Jose Luis Benavides, JLB Traffic Engineering, Inc.

Exhibit A – Project Site Aerial



Exhibit B – Project Site Plan



Jose Benavides

From: Hernandez, Edgar@DOT <Edgar.Hernandez@dot.ca.gov>
Sent: Friday, December 2, 2022 4:28 PM
To: Jose Benavides
Cc: Padilla, Dave@DOT
Subject: RE: Selma Development TIA

Good afternoon Jose,

Thank you for your patience. After further discussion, you may proceed with the submitted SOW for the traffic impact analysis. Caltrans looks forward to reviewing the queuing analysis as part of the traffic analysis. Please let me know if you have any questions.

Respectfully,

Edgar Hernandez
District 6 Office of Planning
Associate Transportation Planner
Work Cell: (559) 981-7436

Carlos Ayala

From: Luna, Hector <HLuna@fresnocountyca.gov>
Sent: Wednesday, November 16, 2022 4:39 PM
To: Carlos Ayala
Cc: Jose Benavides
Subject: RE: Selma Development Project DSOW

Good afternoon,

The Conty concurs with the proposed scope of work

Regards,

Hector E. Luna | **Senior Planner**
Department of Public Works and Planning |
Water and Natural Resources Division |
Transportation
2220 Tulare St. 6th Floor Fresno, CA 93721
Main Office: (559) 600-4292 | Direct: (559) 600-9672
Email: hluna@FresnoCountyCa.gov
Your input matters! Customer Service Survey

From: Carlos Ayala <cayala@jlbtraffic.com>
Sent: Wednesday, November 16, 2022 9:45 AM
To: Luna, Hector <HLuna@fresnocountyca.gov>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: Selma Development Project DSOW

CAUTION!!! - EXTERNAL EMAIL - THINK BEFORE YOU CLICK

Good morning Hector,

Have you had a chance to review the Draft Scope of Work for the Selma Development Project TIA? Please let me know if you have any questions or comments.

Thank you,

Carlos Ayala-Magana
Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704

Office: (559) 570-8991
Direct: (559) 869-4514
Fax: (559) 317-6854
Email: cayala@JLBtraffic.com
www.JLBtraffic.com

From: Carlos Ayala
Sent: Tuesday, October 25, 2022 8:23 AM
To: Luna, Hector <HLuna@fresnocountyca.gov>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: Selma Development Project DSOW

Good morning Hector,

Attached you will find a Draft Scope of Work for the preparation of a Traffic Impact Analysis for the Selma Development Project in the City of Selma.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work. In the absence of comments by November 16, 2022, it will be assumed that the proposed Scope of Work is acceptable to the agency(ies) that have not submitted any comments.

If you have any questions or require additional information, please contact me by phone at (559) 869-4514 or by e-mail at cayala@jlbtraffic.com. We appreciate your time and attention to this matter and look forward to hearing from you soon.

Thank you,

Carlos Ayala-Magana
Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Office: (559) 570-8991
Direct: (559) 869-4514
Fax: (559) 317-6854
Email: cayala@JLBtraffic.com
www.JLBtraffic.com

Carlos Ayala

From: Engineering <engineering@cityofselma.com>
Sent: Wednesday, November 23, 2022 12:03 PM
To: Carlos Ayala
Cc: Jose Benavides; Andrew Vongphachanh
Subject: RE: Selma Development Project DSOW

Carlos,

The city does not have more comments. Thanks

Philip L. Romero, PE
CITY OF SELMA
1710 Tucker Street, Selma, CA 93662
Office: 559.891.2200 | Fax: 559.896.5909
email: engineering@cityofselma.com

From: Carlos Ayala <cayala@jlbtraffic.com>
Sent: Wednesday, November 23, 2022 11:13 AM
To: Engineering <engineering@cityofselma.com>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>; Andrew Vongphachanh <AndrewV@yhmail.com>
Subject: RE: Selma Development Project DSOW

Hello Philip,

Study intersection #9 Stillman Ave / South Main Access Road (Future) references the Project's southernmost middle access driveway. Attached you will find a Vicinity Map showing the proposed study intersections. Please confirm the City has no further comments on the DSOW.

Thank you,

Carlos Ayala-Magana
Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Office: (559) 570-8991
Direct: (559) 869-4514
Fax: (559) 317-6854
Email: cayala@JLBtraffic.com
www.JLBtraffic.com

From: Engineering <engineering@cityofselma.com>
Sent: Monday, November 21, 2022 9:25 AM
To: Carlos Ayala <cayala@jlbtraffic.com>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>; Andrew Vongphachanh <AndrewV@yhmail.com>
Subject: RE: Selma Development Project DSOW

Carlos,

I had my team review the scoping and we do not have any major comments. If anything, perhaps you can include a study location map that is more clear because we were not sure if study intersection #9 Stillman Avenue/ South Main Access Road (Future) means the project's southernmost middle access driveway or some other location. Thanks

Philip L. Romero, PE
CITY OF SELMA
1710 Tucker Street, Selma, CA 93662
Office: 559.891.2200 | Fax: 559.896.5909
email: engineering@cityofselma.com

From: Carlos Ayala <cayala@jlbtraffic.com>
Sent: Wednesday, November 16, 2022 9:46 AM
To: Brandon A Broussard (bbroussard@yhmail.com) <bbroussard@yhmail.com>; Engineering <engineering@cityofselma.com>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: RE: Selma Development Project DSOW

Good morning Brandon,

Have you had a chance to review the Draft Scope of Work for the Selma Development Project TIA? Please let me know if you have any questions or comments.

Thank you,

Carlos Ayala-Magana
Engineer I/II

Traffic Engineering, Transportation Planning and Parking Solutions
Certified Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE)

516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
Office: (559) 570-8991
Direct: (559) 869-4514
Fax: (559) 317-6854
Email: cayala@JLBtraffic.com
www.JLBtraffic.com

From: Carlos Ayala
Sent: Tuesday, October 25, 2022 8:48 AM

To: Brandon A Broussard (bbroussard@yhmail.com) <bbroussard@yhmail.com>; Engineering <engineering@cityofselma.com>
Cc: Jose Benavides <jbenavides@jlbtraffic.com>
Subject: Selma Development Project DSOW

Good morning Brandon,

Attached you will find a Draft Scope of Work for the preparation of a Traffic Impact Analysis for the Selma Development Project in the City of Selma. It is our understanding the scope for this Project has already been presented to the City, however, we would like to formally submit and receive approval, or comments.

We kindly ask that you take a moment to review and comment on the proposed Scope of Work.

If you have any questions or require additional information, please contact me by phone at (559) 869-4514 or by e-mail at cayala@jlbtraffic.com. We appreciate your time and attention to this matter and look forward to hearing from you soon.

Thank you,

Carlos Ayala-Magana
Engineer I/II

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Fresno, CA 93704
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Direct: (559) 869-4514
Fax: (559) 317-6854
Email: cayala@JLBtraffic.com
www.JLBtraffic.com

C I T Y O F S E L M A

1710 TUCKER STREET - SELMA CALIFORNIA 93662

FROM: City of Selma Community Development Department

TO: Carlos Ayala-Magana
JLB Traffic Engineering
516 W. Shaw Avenue, Suite 103
Fresno, CA 93722

Subject: Review of the Casitas Development Project (JLB 001-009) Traffic Study Scoping Document

The City of Selma has been requested to review the scope of the proposed traffic study analyzing potential impacts generated by the Casitas Development Project. The proposed project described and confirmed by staff's understanding is for the development of the property (APN: 385-260-33). The project proposes the approximately 37.4 acres with a mix of residential, commercial, and park space. The project site is located near the southwest corner of SR 99 and Floral Avenue.

In addition, the project proposes will require an annexation and prezone to Regional Commercial (C-R).

Below is a review of the scoping document and recommendations

1) On page 2, please add a figure to the scoping document and the ultimate Traffic Impact Study of the study intersections in relation to the project site.
2) On page 4, under the Near Term Projects to be included section, please give specifics on projects: Graham Commercial and Stillman/Cinema Apartments. The City does not have any active applications associated with those names.
3) On page 4, under the Near Term Projects to be included section, please include the Multi Family/Commercial project located at the NE corner of Nebraska and Highland. In addition, please include the Joan Mixed Use project located at the SW corner of Nebraska and Highland.
4) Please route and include any comments from Caltrans and Fresno County as necessary.

Please reach out if you have any further questions.

Trevor Stearns
Contract City Planner
Community Development Department
O: 559-891-2209
1711 Tucker St.
Selma, CA 93662

Appendix B: Traffic Counts

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

LOCATION Highland Ave @ Golden State Blvd
COUNTY Fresno
COLLECTION DATE Thursday, September 29, 2022

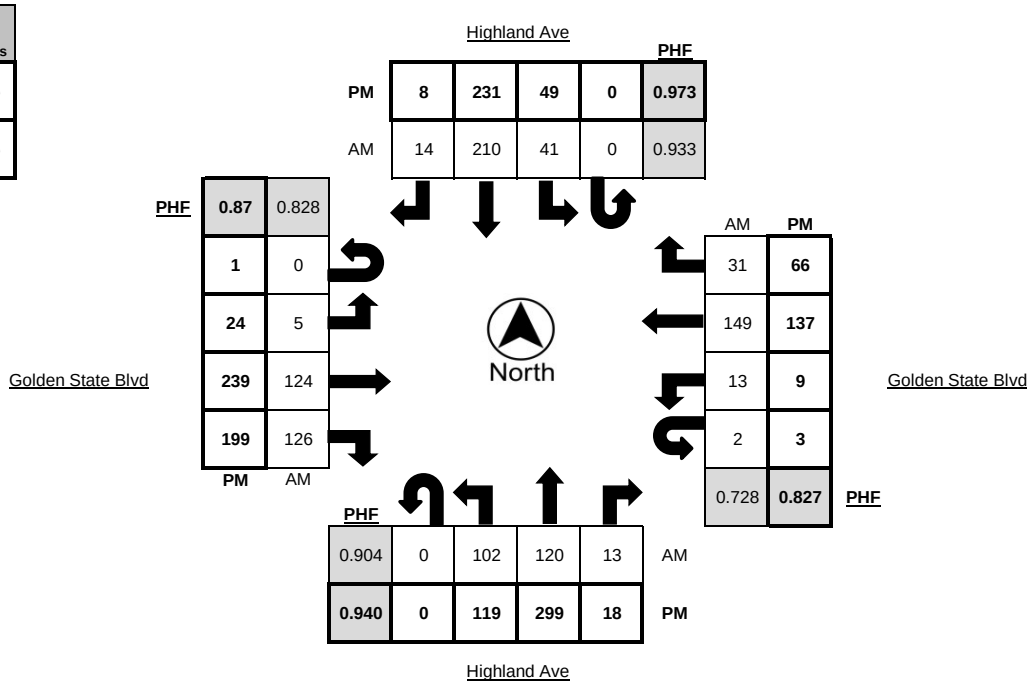
LATITUDE 36.5815
LONGITUDE -119.6286
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	28	17	2	4	0	8	63	2	1	0	1	28	14	2	1	2	23	5	2
7:15 AM - 7:30 AM	0	19	14	2	1	0	8	60	5	0	0	2	18	22	3	0	3	33	9	3
7:30 AM - 7:45 AM	0	32	25	2	2	0	11	55	4	0	0	0	15	15	3	1	2	49	5	6
7:45 AM - 8:00 AM	0	29	33	3	3	0	13	53	2	0	0	2	32	28	4	0	4	53	10	2
8:00 AM - 8:15 AM	0	32	30	3	3	0	7	51	5	1	0	0	32	21	4	0	2	35	8	2
8:15 AM - 8:30 AM	0	20	26	5	1	0	14	55	2	1	0	3	24	36	7	2	7	34	4	1
8:30 AM - 8:45 AM	0	21	31	2	2	0	7	51	5	1	0	0	36	41	10	0	0	27	9	1
8:45 AM - 9:00 AM	0	15	25	5	1	0	13	57	7	2	0	0	23	39	4	1	4	22	3	0
TOTAL	**0**	**196**	**201**	**24**	**17**	**0**	**81**	**445**	**32**	**6**	**0**	**8**	**208**	**216**	**37**	**5**	**24**	**276**	**53**	**17**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	36	60	3	2	0	14	49	1	2	0	3	45	54	3	0	10	45	15	2
4:15 PM - 4:30 PM	0	23	73	8	1	0	12	50	6	1	1	2	63	43	8	0	6	46	17	2
4:30 PM - 4:45 PM	0	25	67	2	1	0	8	55	2	3	1	7	66	53	4	1	3	30	17	3
4:45 PM - 5:00 PM	0	27	68	5	2	0	16	53	1	2	0	5	58	50	1	2	5	31	8	0
5:00 PM - 5:15 PM	0	28	77	4	0	0	12	56	4	0	1	9	65	58	3	1	3	39	22	0
5:15 PM - 5:30 PM	0	31	81	4	2	0	11	59	2	0	0	6	59	46	1	0	1	30	19	2
5:30 PM - 5:45 PM	0	33	73	5	2	0	10	63	1	0	0	4	57	45	2	0	0	37	17	2
5:45 PM - 6:00 PM	0	19	70	4	1	0	14	57	1	0	0	4	45	29	1	2	2	30	11	0
TOTAL	**0**	**222**	**569**	**35**	**11**	**0**	**97**	**442**	**18**	**8**	**3**	**40**	**458**	**378**	**23**	**6**	**30**	**288**	**126**	**11**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:45 AM - 8:45 AM	0	102	120	13	9	0	41	210	14	3	0	5	124	126	25	2	13	149	31	6
4:45 PM - 5:45 PM	0	119	299	18	6	0	49	231	8	2	1	24	239	199	7	3	9	137	66	4

	PHF	Trucks
AM	0.906	4.5%
PM	0.925	1.4%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

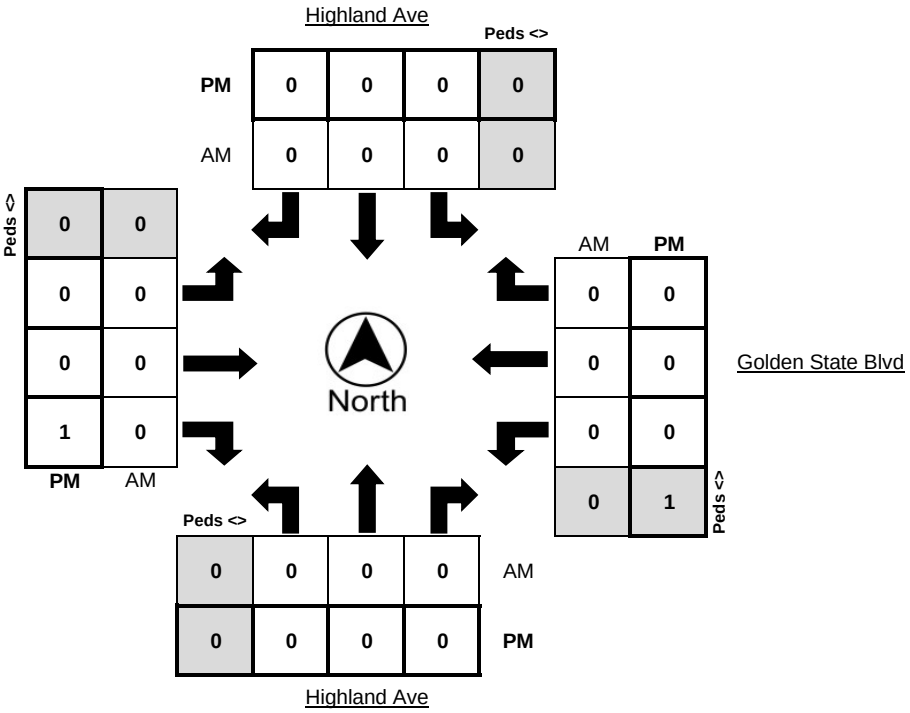
LOCATION Highland Ave @ Golden State Blvd
LATITUDE 36.5815
COUNTY Fresno
LONGITUDE -119.6286
COLLECTION DATE Thursday, September 29, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0
TOTAL	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**2**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:45 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	1	1



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

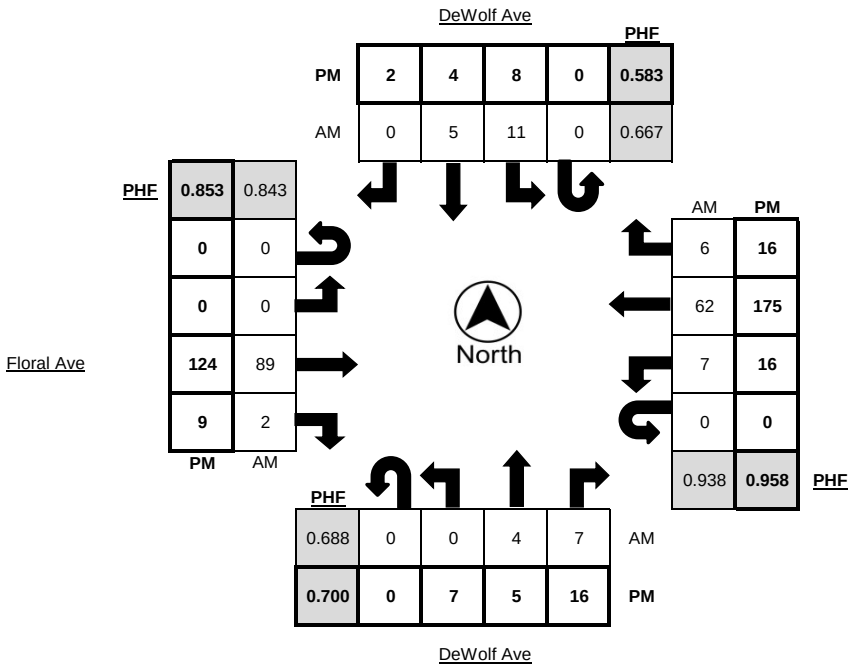
LOCATION Floral Ave @ De Wolf Ave
LATITUDE 36.5763
COUNTY Fresno
LONGITUDE -119.6466
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	1	0	3	0	0	1	0	1	1	0	0	15	2	0	0	4	14	1	2
7:15 AM - 7:30 AM	0	0	1	2	0	0	1	1	0	0	0	1	20	2	1	0	1	19	1	1
7:30 AM - 7:45 AM	0	0	2	0	0	0	3	2	0	0	0	0	20	0	0	0	0	19	1	0
7:45 AM - 8:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	27	0	0	0	2	14	3	0
8:00 AM - 8:15 AM	0	0	0	3	0	0	4	1	0	0	0	0	18	1	0	0	2	13	1	0
8:15 AM - 8:30 AM	0	0	1	3	1	0	4	2	0	0	0	0	24	1	0	0	3	16	1	1
8:30 AM - 8:45 AM	0	0	0	1	0	0	2	1	1	0	0	0	21	0	0	0	3	13	1	0
8:45 AM - 9:00 AM	0	1	0	0	0	0	1	1	0	0	0	0	15	0	0	0	4	13	1	0
TOTAL	**0**	**2**	**5**	**13**	**1**	**0**	**16**	**8**	**2**	**1**	**0**	**1**	**160**	**6**	**1**	**0**	**19**	**121**	**10**	**4**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	3	1	2	0	0	3	1	1	1	0	0	34	3	2	0	6	33	3	2
4:15 PM - 4:30 PM	0	3	1	3	0	0	4	2	1	0	0	1	29	1	0	0	5	41	3	0
4:30 PM - 4:45 PM	0	3	2	5	0	0	4	2	0	0	0	0	35	4	0	0	4	43	4	2
4:45 PM - 5:00 PM	0	0	2	3	0	0	2	1	0	0	0	0	23	1	0	0	5	42	4	1
5:00 PM - 5:15 PM	0	3	0	2	0	0	0	1	0	0	0	0	34	2	3	0	3	45	3	2
5:15 PM - 5:30 PM	0	1	1	6	0	0	2	0	2	1	0	0	32	2	0	0	4	45	5	0
5:30 PM - 5:45 PM	0	0	0	2	0	0	6	2	0	0	0	1	27	1	0	0	2	44	0	0
5:45 PM - 6:00 PM	0	0	0	2	0	0	2	0	0	0	0	0	21	2	1	0	6	27	5	2
TOTAL	**0**	**13**	**7**	**25**	**0**	**0**	**23**	**9**	**4**	**2**	**0**	**2**	**235**	**16**	**6**	**0**	**35**	**320**	**27**	**9**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	0	4	7	1	0	11	5	0	0	0	0	89	2	0	0	7	62	6	1
4:30 PM - 5:30 PM	0	7	5	16	0	0	8	4	2	1	0	0	124	9	3	0	16	175	16	5

	PHF	Trucks
AM	0.877	1.0%
PM	0.901	2.4%



Metro Traffic Data Inc.
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Turning Movement Report

Prepared For:
JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

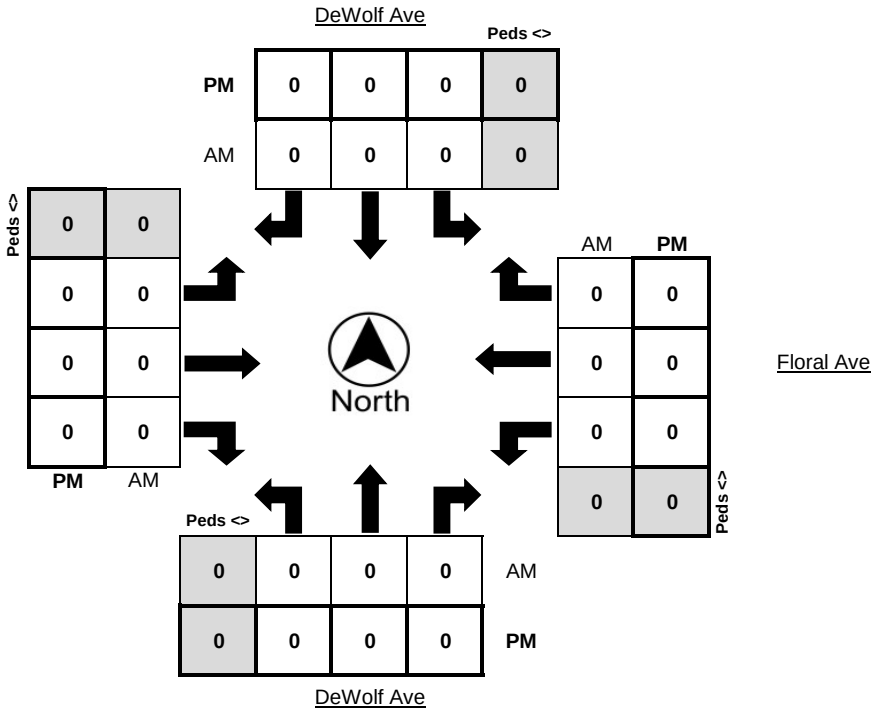
LOCATION Floral Ave @ De Wolf Ave
LATITUDE 36.5763
COUNTY Fresno
LONGITUDE -119.6466
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**0**



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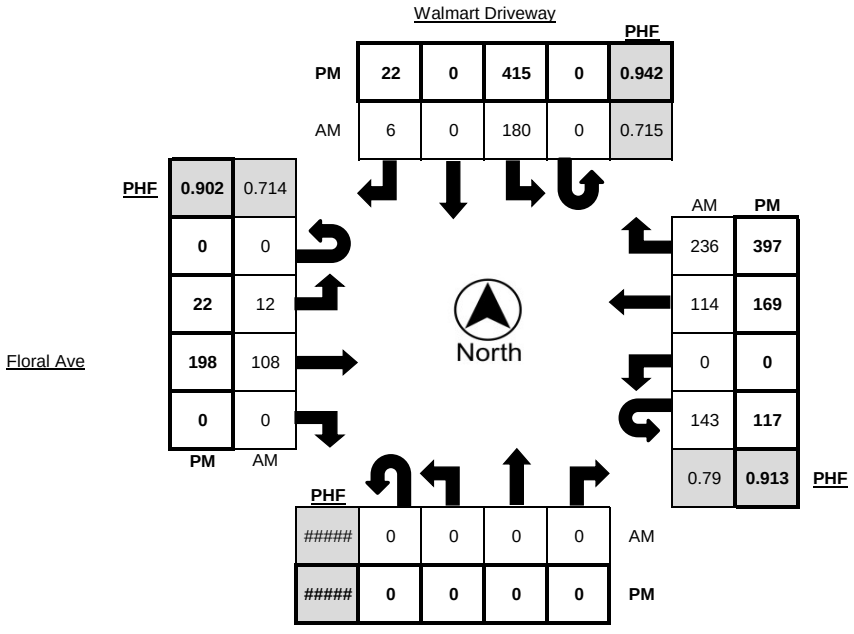
LOCATION Floral Ave @ Walmart Driveway
LATITUDE 36.5763
COUNTY Fresno
LONGITUDE -119.6332
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	0	0	0	0	27	0	1	0	0	3	15	0	0	31	0	30	15	2
7:15 AM - 7:30 AM	0	0	0	0	0	0	21	0	2	0	0	2	25	0	1	36	0	20	20	2
7:30 AM - 7:45 AM	0	0	0	0	0	0	28	0	3	0	0	3	26	0	3	36	0	38	28	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	28	0	2	0	0	3	30	0	1	31	0	38	43	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	27	0	1	3	0	3	23	0	0	32	0	28	52	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	40	0	1	0	0	2	40	0	1	36	0	30	54	2
8:30 AM - 8:45 AM	0	0	0	0	0	0	64	0	1	0	0	1	22	0	2	40	0	31	85	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	49	0	3	2	0	6	23	0	1	35	0	25	45	1
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**284**	**0**	**14**	**5**	**0**	**23**	**204**	**0**	**9**	**277**	**0**	**240**	**342**	**7**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	0	0	0	0	107	0	5	2	0	3	58	0	3	27	0	43	108	5
4:15 PM - 4:30 PM	0	0	0	0	0	0	106	0	4	0	0	7	41	0	0	32	0	39	81	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	93	0	6	0	0	8	52	0	1	29	0	45	113	5
4:45 PM - 5:00 PM	0	0	0	0	0	0	109	0	7	1	0	4	47	0	0	29	0	42	95	1
5:00 PM - 5:15 PM	0	0	0	0	0	0	119	0	11	0	0	9	47	0	1	29	0	42	91	1
5:15 PM - 5:30 PM	0	0	0	0	0	0	93	0	6	1	0	8	48	0	1	27	0	45	75	1
5:30 PM - 5:45 PM	0	0	0	0	0	0	108	0	4	1	0	5	40	0	0	30	0	42	111	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	112	0	5	0	0	7	40	0	2	32	0	37	69	2
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**847**	**0**	**48**	**5**	**0**	**51**	**373**	**0**	**8**	**235**	**0**	**335**	**743**	**15**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
8:00 AM - 9:00 AM	0	0	0	0	0	0	180	0	6	5	0	12	108	0	4	143	0	114	236	3
4:00 PM - 5:00 PM	0	0	0	0	0	0	415	0	22	3	0	22	198	0	4	117	0	169	397	11

	PHF	Trucks
AM	0.819	1.5%
PM	0.954	1.3%



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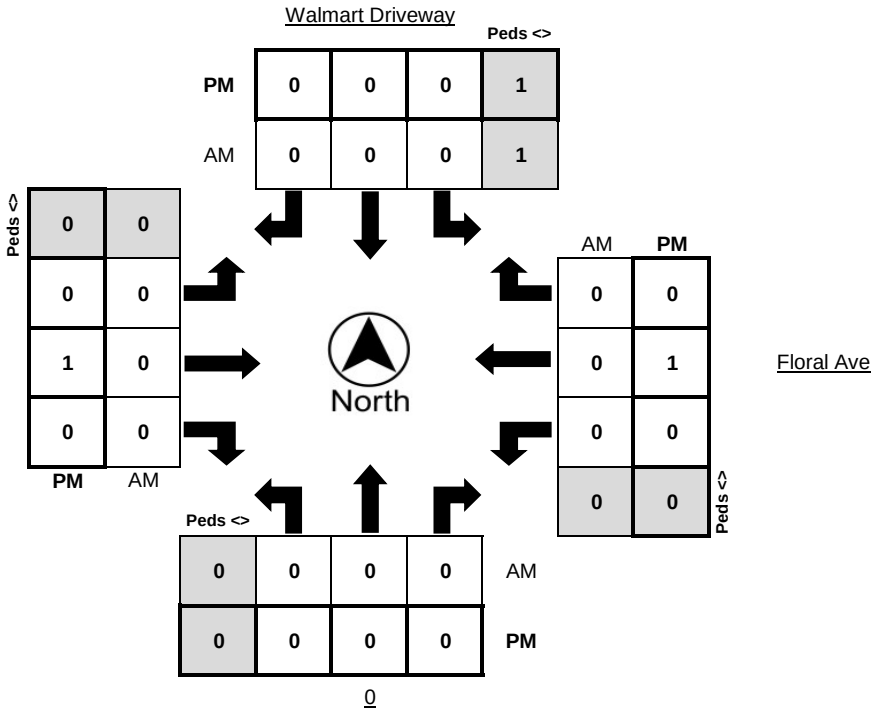
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LATITUDE 36.5763
COUNTY Fresno
LONGITUDE -119.6332
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
8:00 AM - 9:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0

	Bikes	Peds
AM Peak Total	0	1
PM Peak Total	**2**	**1**



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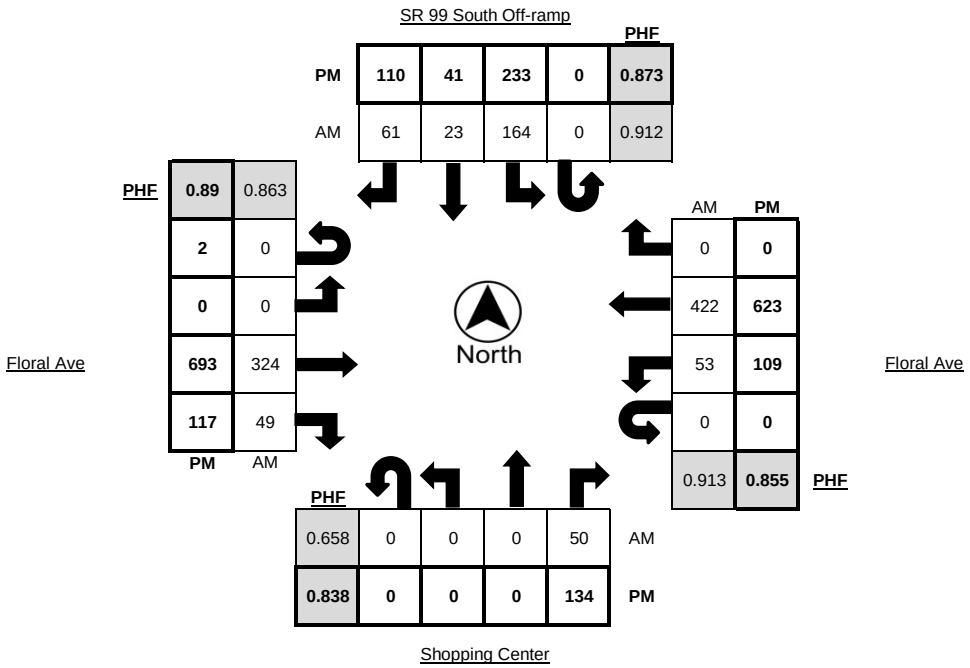
LOCATION Floral Ave @ SR 99 SB Offramp / Shopping Center
LATITUDE 36.5764
COUNTY Fresno
LONGITUDE -119.6308
COLLECTION DATE Wednesday, November 30, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	0	8	1	0	27	2	18	7	0	0	61	4	7	0	5	50	0	3
7:15 AM - 7:30 AM	0	0	0	10	0	0	43	5	19	8	0	0	46	10	7	0	4	49	0	2
7:30 AM - 7:45 AM	0	0	0	13	0	0	67	3	25	3	0	0	68	5	6	0	5	57	0	1
7:45 AM - 8:00 AM	0	0	0	8	0	0	64	4	18	11	0	0	65	4	2	0	4	85	0	0
8:00 AM - 8:15 AM	0	0	0	7	0	0	51	5	9	9	0	0	59	7	2	0	13	98	0	1
8:15 AM - 8:30 AM	0	0	0	11	0	0	47	7	14	7	0	0	84	13	7	0	13	117	0	1
8:30 AM - 8:45 AM	0	0	0	13	0	0	39	5	24	4	0	0	92	16	3	0	11	108	0	0
8:45 AM - 9:00 AM	0	0	0	19	0	0	27	6	14	3	0	0	89	13	3	0	16	99	0	1
TOTAL	**0**	**0**	**0**	**89**	**1**	**0**	**365**	**37**	**141**	**52**	**0**	**0**	**564**	**72**	**37**	**0**	**71**	**663**	**0**	**9**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	0	35	0	0	54	8	30	5	0	0	202	26	2	0	28	160	0	1
4:15 PM - 4:30 PM	0	0	0	29	0	0	58	8	28	1	2	0	147	29	1	0	27	122	0	2
4:30 PM - 4:45 PM	0	0	0	30	0	0	57	12	19	2	0	0	169	36	7	0	30	151	0	1
4:45 PM - 5:00 PM	0	0	0	40	0	0	64	13	33	3	0	0	175	26	2	0	24	190	0	2
5:00 PM - 5:15 PM	0	0	0	39	1	0	59	11	37	3	0	0	104	38	3	0	23	153	0	3
5:15 PM - 5:30 PM	0	0	0	35	0	0	70	16	17	5	0	0	141	30	2	0	28	131	0	2
5:30 PM - 5:45 PM	0	0	0	33	0	0	73	12	37	4	0	0	169	41	3	0	28	124	0	2
5:45 PM - 6:00 PM	0	0	0	42	0	0	67	11	25	1	0	0	154	21	5	0	30	141	0	0
TOTAL	**0**	**0**	**0**	**283**	**1**	**0**	**502**	**91**	**226**	**24**	**2**	**0**	**1261**	**247**	**25**	**0**	**218**	**1172**	**0**	**13**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
8:00 AM - 9:00 AM	0	0	0	50	0	0	164	23	61	23	0	0	324	49	15	0	53	422	0	3
4:00 PM - 5:00 PM	0	0	0	134	0	0	233	41	110	11	2	0	693	117	12	0	109	623	0	6

	PHF	Trucks
AM	0.930	3.6%
PM	0.912	1.4%



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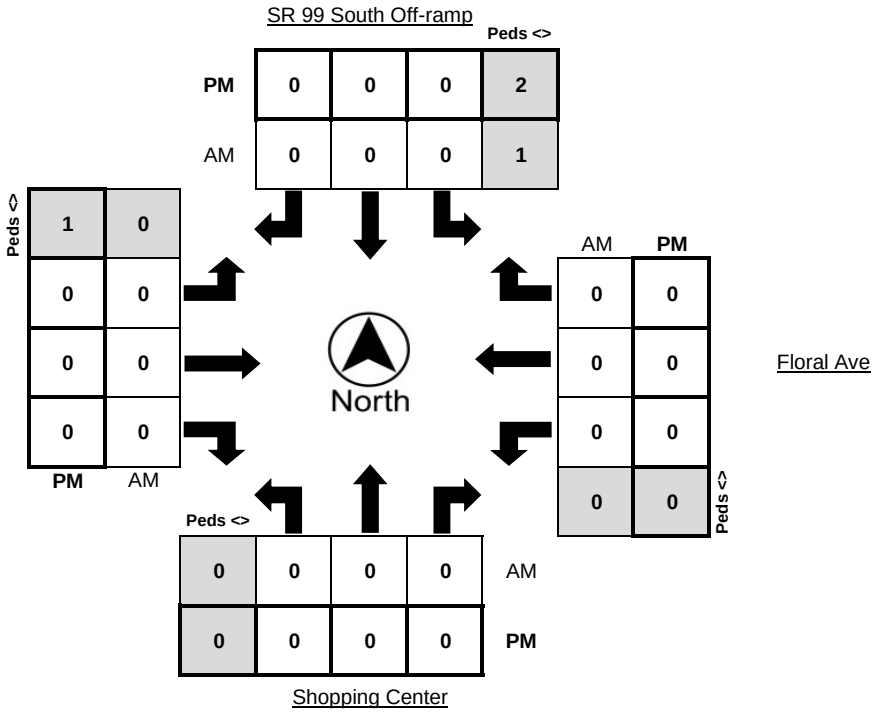
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	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM - 5:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
8:00 AM - 9:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1

	Bikes	Peds
AM Peak Total	0	1
PM Peak Total	**0**	**3**



Metro Traffic Data Inc.
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Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

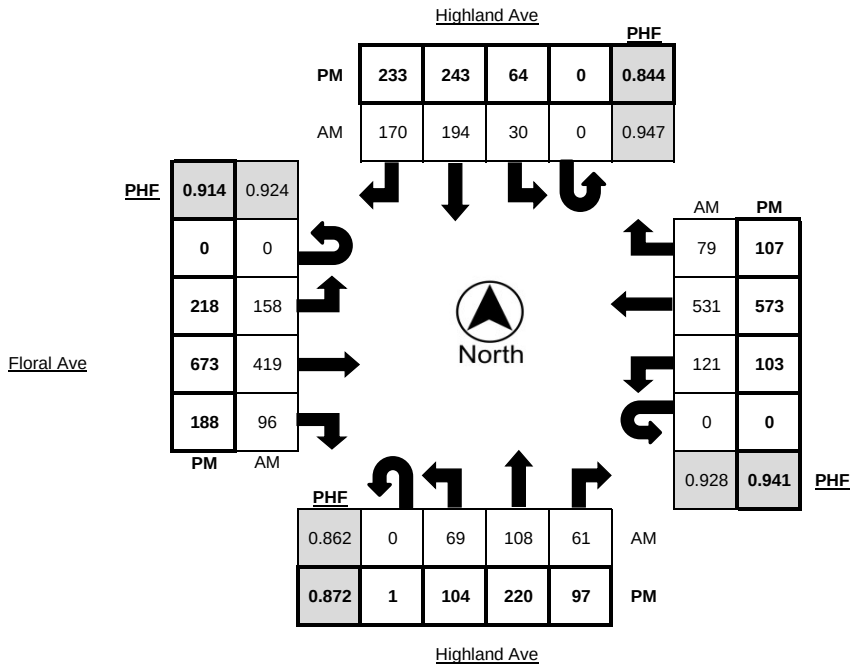
LOCATION Floral Ave @ Highland Ave
LATITUDE 36.5768
COUNTY Fresno
LONGITUDE -119.6287
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	16	25	8	3	0	4	30	46	3	0	22	61	19	1	0	9	74	16	1
7:15 AM - 7:30 AM	0	11	33	5	3	0	2	51	54	6	0	21	88	23	8	0	18	77	20	2
7:30 AM - 7:45 AM	0	14	12	16	3	0	6	50	56	5	0	24	100	22	5	0	19	108	19	4
7:45 AM - 8:00 AM	0	7	35	14	2	0	4	56	44	7	0	51	110	21	2	0	23	133	21	3
8:00 AM - 8:15 AM	0	21	29	19	2	0	8	43	33	5	0	32	106	20	2	0	29	142	26	4
8:15 AM - 8:30 AM	0	21	28	14	2	0	8	62	34	3	0	38	100	27	1	0	39	123	12	6
8:30 AM - 8:45 AM	0	20	16	14	0	0	10	33	59	3	0	37	103	28	3	0	30	133	20	2
8:45 AM - 9:00 AM	1	24	14	7	1	0	7	57	40	6	0	36	95	21	4	0	30	88	25	4
TOTAL	**1**	**134**	**192**	**97**	**16**	**0**	**49**	**382**	**366**	**38**	**0**	**261**	**763**	**181**	**26**	**0**	**197**	**878**	**159**	**26**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	1	26	37	19	2	0	11	59	61	3	0	74	147	48	6	0	31	162	26	7
4:15 PM - 4:30 PM	0	26	50	29	3	0	13	50	65	3	0	55	156	48	2	0	23	145	27	0
4:30 PM - 4:45 PM	0	29	65	27	0	0	16	51	61	2	0	61	188	46	3	0	24	153	31	4
4:45 PM - 5:00 PM	1	28	51	21	2	0	13	53	58	2	0	51	174	42	1	0	32	120	27	5
5:00 PM - 5:15 PM	0	21	54	20	0	0	22	89	49	2	0	51	155	52	2	0	24	155	22	1
5:15 PM - 5:30 PM	0	24	56	26	1	0	20	56	40	3	0	52	151	36	2	0	26	121	26	2
5:30 PM - 5:45 PM	1	35	43	27	1	0	11	47	36	3	0	51	188	35	5	0	22	142	26	2
5:45 PM - 6:00 PM	0	14	47	22	0	0	13	47	28	3	0	48	141	52	1	0	20	102	21	2
TOTAL	**3**	**203**	**403**	**191**	**9**	**0**	**119**	**452**	**398**	**21**	**0**	**443**	**1300**	**359**	**22**	**0**	**202**	**1100**	**206**	**23**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:45 AM - 8:45 AM	0	69	108	61	6	0	30	194	170	18	0	158	419	96	8	0	121	531	79	15
4:15 PM - 5:15 PM	1	104	220	97	5	0	64	243	233	9	0	218	673	188	8	0	103	573	107	10

	PHF	Trucks
AM	0.981	2.3%
PM	0.939	1.1%



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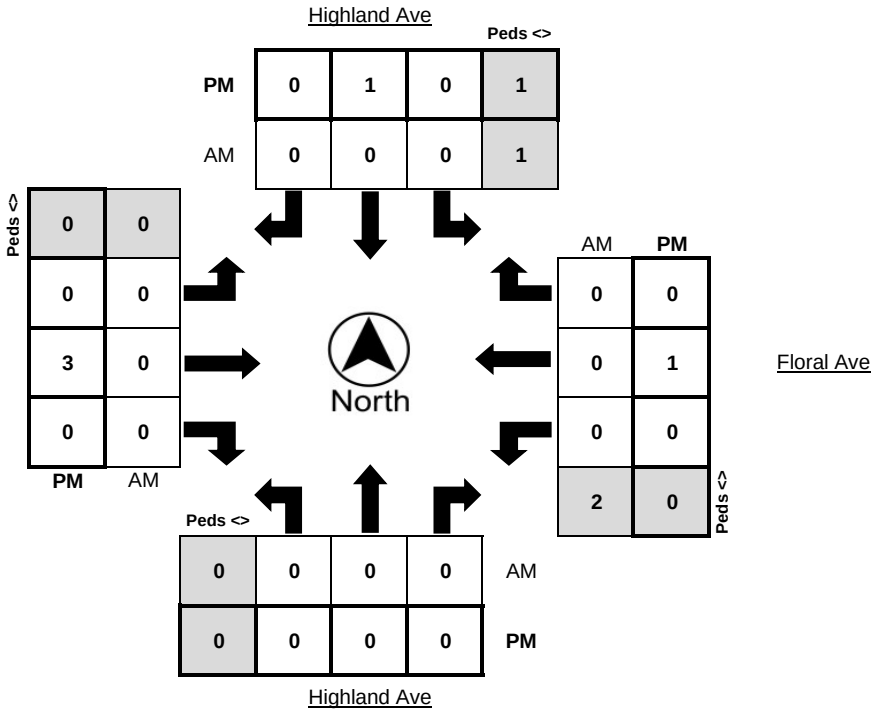
LOCATION Floral Ave @ Highland Ave
LATITUDE 36.5768
COUNTY Fresno
LONGITUDE -119.6287
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**1**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:45 AM - 8:45 AM	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0
4:15 PM - 5:15 PM	0	0	0	1	0	1	0	0	0	3	0	0	0	1	0	0

	Bikes	Peds
AM Peak Total	0	3
PM Peak Total	5	1



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Fresno, CA 93704

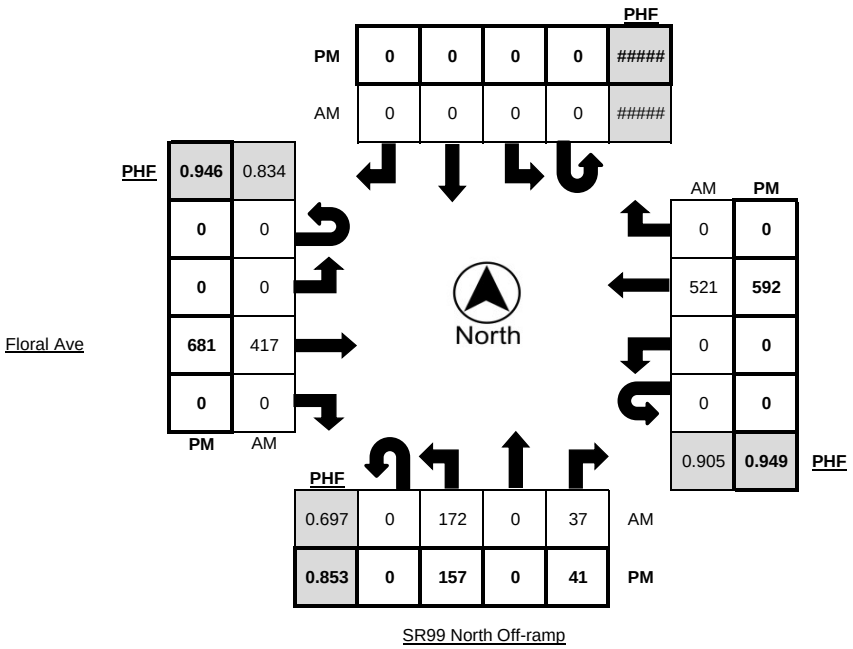
LOCATION Floral Ave @ SR 99 NB Offramp
LATITUDE 36.5765
COUNTY Fresno
LONGITUDE -119.6268
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	27	0	9	3	0	0	0	0	0	0	0	65	0	1	0	0	72	0	1
7:15 AM - 7:30 AM	0	30	0	9	1	0	0	0	0	0	0	0	74	0	7	0	0	88	0	1
7:30 AM - 7:45 AM	0	39	0	9	1	0	0	0	0	0	0	0	112	0	5	0	0	121	0	3
7:45 AM - 8:00 AM	0	61	0	14	1	0	0	0	0	0	0	0	125	0	1	0	0	126	0	3
8:00 AM - 8:15 AM	0	38	0	11	2	0	0	0	0	0	0	0	91	0	2	0	0	130	0	2
8:15 AM - 8:30 AM	0	34	0	3	2	0	0	0	0	0	0	0	89	0	0	0	0	144	0	2
8:30 AM - 8:45 AM	0	47	0	10	5	0	0	0	0	0	0	0	89	0	2	0	0	96	0	1
8:45 AM - 9:00 AM	0	33	0	8	2	0	0	0	0	0	0	0	71	0	0	0	0	93	0	1
TOTAL	**0**	**309**	**0**	**73**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**716**	**0**	**18**	**0**	**0**	**870**	**0**	**14**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	54	0	8	2	0	0	0	0	0	0	0	122	0	3	0	0	148	0	4
4:15 PM - 4:30 PM	0	36	0	14	2	0	0	0	0	0	0	0	156	0	1	0	0	156	0	2
4:30 PM - 4:45 PM	0	48	0	10	2	0	0	0	0	0	0	0	176	0	3	0	0	149	0	1
4:45 PM - 5:00 PM	0	40	0	7	3	0	0	0	0	0	0	0	180	0	0	0	0	132	0	2
5:00 PM - 5:15 PM	0	33	0	10	2	0	0	0	0	0	0	0	169	0	0	0	0	155	0	0
5:15 PM - 5:30 PM	0	38	0	10	2	0	0	0	0	0	0	0	169	0	0	0	0	141	0	1
5:30 PM - 5:45 PM	0	37	0	8	2	0	0	0	0	0	0	0	165	0	2	0	0	121	0	0
5:45 PM - 6:00 PM	0	37	0	12	2	0	0	0	0	0	0	0	158	0	0	0	0	107	0	0
TOTAL	**0**	**323**	**0**	**79**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1295**	**0**	**9**	**0**	**0**	**1109**	**0**	**10**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	0	172	0	37	6	0	0	0	0	0	0	0	417	0	8	0	0	521	0	10
4:15 PM - 5:15 PM	0	157	0	41	9	0	0	0	0	0	0	0	681	0	4	0	0	592	0	5

	PHF	Trucks
AM	0.880	2.1%
PM	0.960	1.2%



SR99 North Off-ramp

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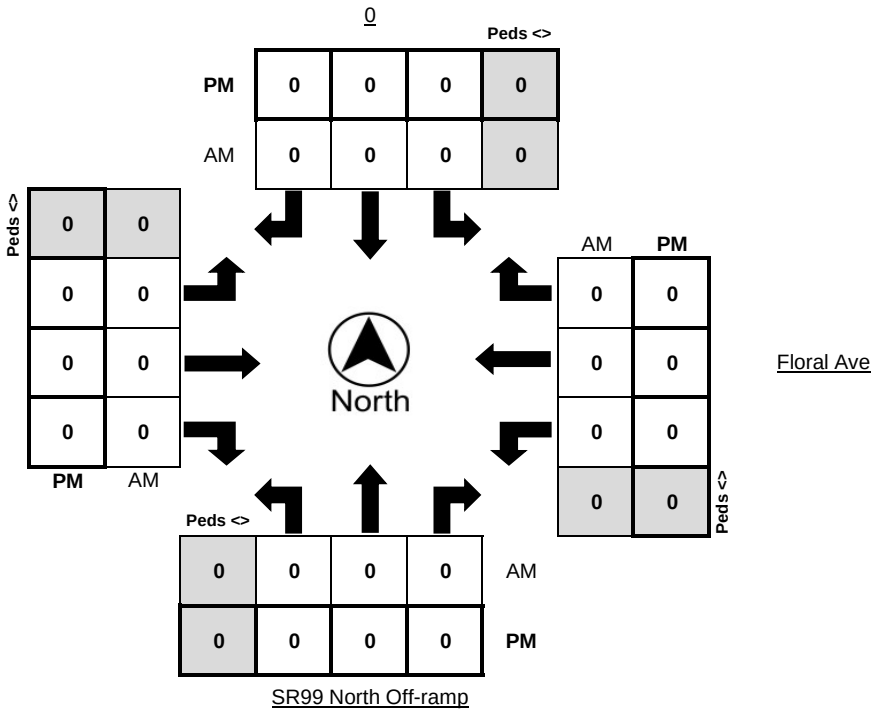
LOCATION Floral Ave @ SR 99 NB Offramp
LATITUDE 36.5765
COUNTY Fresno
LONGITUDE -119.6268
COLLECTION DATE Thursday, November 17, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:30 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	**0**	**0**



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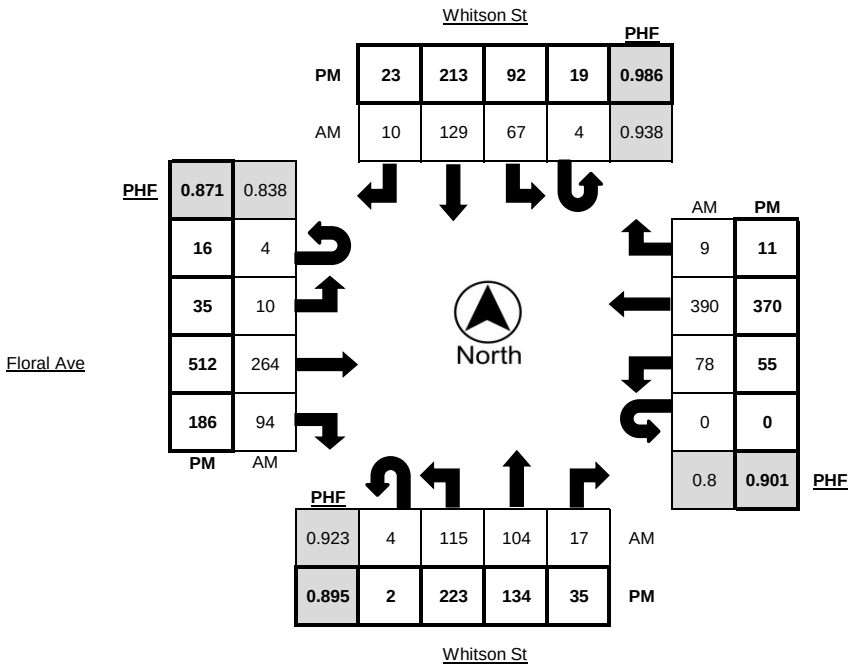
LOCATION Whitson St @ Floral Ave
LATITUDE 36.5763
COUNTY Fresno
LONGITUDE -119.6247
COLLECTION DATE Thursday, September 29, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	1	15	10	5	1	0	11	25	2	2	1	3	36	9	3	0	2	68	0	0
7:15 AM - 7:30 AM	0	15	28	4	6	3	12	19	1	0	1	3	47	11	3	0	8	73	4	2
7:30 AM - 7:45 AM	0	19	36	3	6	0	9	18	1	0	1	3	67	26	4	0	8	79	1	0
7:45 AM - 8:00 AM	1	19	41	4	4	1	17	32	1	2	0	4	80	27	2	0	13	74	2	1
8:00 AM - 8:15 AM	2	33	24	3	2	0	13	33	3	4	1	3	65	24	2	0	23	123	3	1
8:15 AM - 8:30 AM	0	32	21	4	1	1	20	28	5	6	1	1	68	21	4	0	28	112	2	1
8:30 AM - 8:45 AM	1	31	18	6	0	2	17	36	1	5	2	2	51	22	3	0	14	81	2	2
8:45 AM - 9:00 AM	0	36	22	2	2	1	15	31	8	3	1	4	66	34	2	0	7	64	1	1
TOTAL	**5**	**200**	**200**	**31**	**22**	**8**	**114**	**222**	**22**	**22**	**8**	**23**	**480**	**174**	**23**	**0**	**103**	**674**	**15**	**8**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	55	35	15	1	3	20	38	2	1	4	9	110	40	9	0	11	106	2	1
4:15 PM - 4:30 PM	2	54	43	10	2	6	23	54	5	4	4	11	149	51	4	0	11	84	3	0
4:30 PM - 4:45 PM	0	49	29	7	3	3	29	49	4	3	7	9	121	41	0	0	16	94	2	1
4:45 PM - 5:00 PM	0	53	27	10	1	8	22	48	9	2	3	8	111	40	1	0	18	102	1	0
5:00 PM - 5:15 PM	0	67	35	8	2	2	18	62	5	1	2	7	131	54	1	0	10	90	5	0
5:15 PM - 5:30 PM	3	54	25	15	2	2	23	52	3	2	5	10	120	43	1	0	23	82	5	0
5:30 PM - 5:45 PM	0	45	25	11	1	2	28	50	4	0	3	12	134	28	1	0	17	88	0	0
5:45 PM - 6:00 PM	0	32	23	5	0	4	19	34	2	0	2	8	101	40	1	0	20	86	2	0
TOTAL	**5**	**409**	**242**	**81**	**12**	**30**	**182**	**387**	**34**	**13**	**30**	**74**	**977**	**337**	**18**	**0**	**126**	**732**	**20**	**2**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:45 AM - 8:45 AM	4	115	104	17	7	4	67	129	10	17	4	10	264	94	11	0	78	390	9	5
4:15 PM - 5:15 PM	2	223	134	35	8	19	92	213	23	10	16	35	512	186	6	0	55	370	11	1

	PHF	Trucks
AM	0.920	3.1%
PM	0.944	1.3%



Metro Traffic Data Inc.
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Hanford, CA 93230

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Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

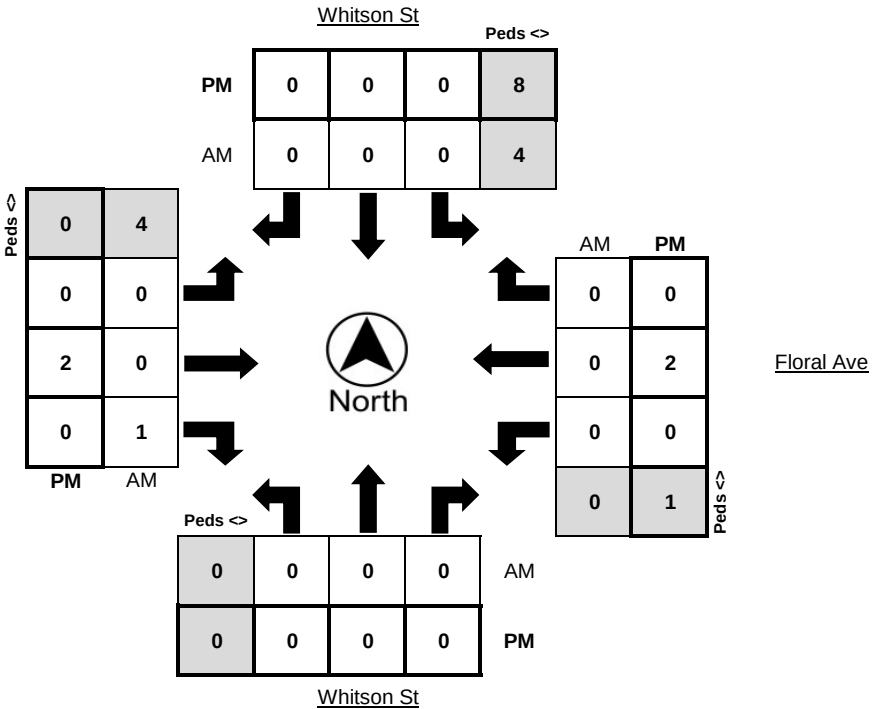
LOCATION Whitson St @ Floral Ave
LATITUDE 36.5763
COUNTY Fresno
LONGITUDE -119.6247
COLLECTION DATE Thursday, September 29, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:30 AM - 8:45 AM	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**4**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	1	0	0	0	0	0	1	0	1	0	2	0	0
5:15 PM - 5:30 PM	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
TOTAL	**0**	**0**	**0**	**12**	**0**	**1**	**0**	**4**	**0**	**3**	**0**	**1**	**0**	**3**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:45 AM - 8:45 AM	0	0	0	4	0	0	0	0	0	0	1	0	0	0	0	4
4:15 PM - 5:15 PM	0	0	0	8	0	0	0	0	0	2	0	1	0	2	0	0

	Bikes	Peds
AM Peak Total	1	8
PM Peak Total	4	9



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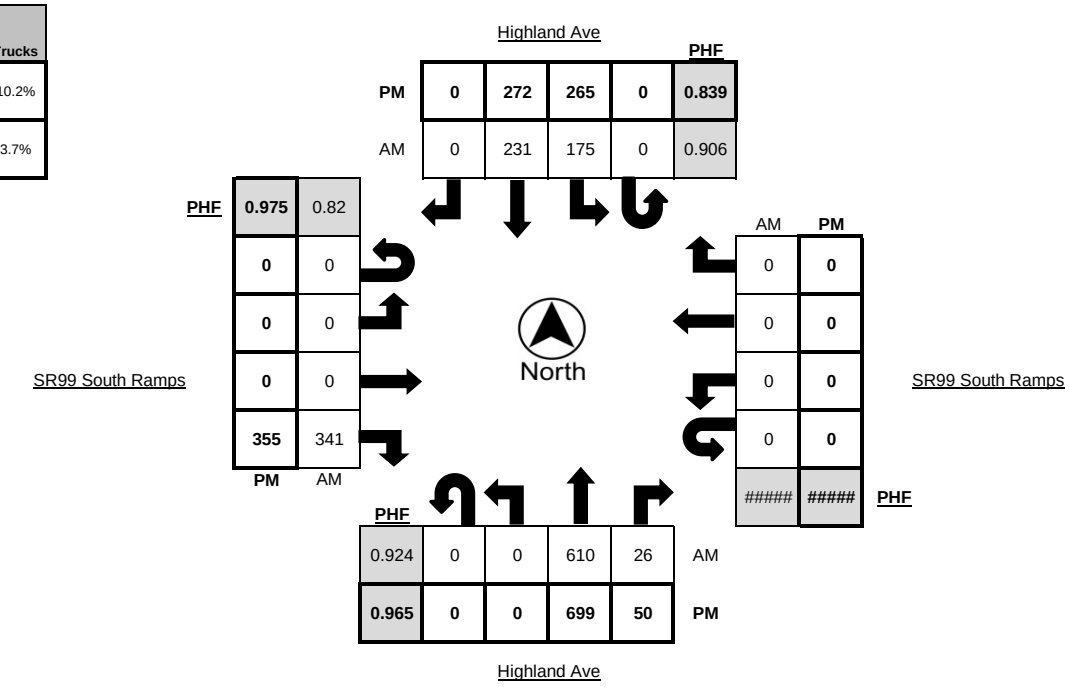
LOCATION Highland Ave @ SR 99 SB Ramps
LATITUDE 36.5749
COUNTY Fresno
LONGITUDE -119.6287
COLLECTION DATE Wednesday, November 30, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	0	147	5	12	0	39	45	0	13	0	0	0	85	12	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	165	7	12	0	44	43	0	12	0	0	0	104	17	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	157	8	9	0	50	62	0	10	0	0	0	78	13	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	148	9	13	0	35	65	0	7	0	0	0	86	13	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	140	2	12	0	46	61	0	13	0	0	0	73	10	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	133	5	11	0	43	79	0	7	0	0	0	70	15	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	89	4	6	0	41	60	0	9	0	0	0	58	11	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	112	8	12	0	35	45	0	7	0	0	0	62	14	0	0	0	0	0
TOTAL	**0**	**0**	**1091**	**48**	**87**	**0**	**333**	**460**	**0**	**78**	**0**	**0**	**0**	**616**	**105**	**0**	**0**	**0**	**0**	**0**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	153	11	8	0	79	60	0	6	0	0	0	72	8	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	165	20	9	0	69	54	0	4	0	0	0	91	6	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	171	12	9	0	75	85	0	8	0	0	0	91	2	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	187	7	4	0	61	78	0	3	0	0	0	88	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	176	11	3	0	60	55	0	4	0	0	0	85	9	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	168	19	3	0	44	53	0	6	0	0	0	100	6	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	191	12	6	0	67	56	0	2	0	0	0	77	4	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	108	7	3	0	63	48	0	7	0	0	0	85	5	0	0	0	0	0
TOTAL	**0**	**0**	**1319**	**99**	**45**	**0**	**518**	**489**	**0**	**40**	**0**	**0**	**0**	**689**	**40**	**0**	**0**	**0**	**0**	**0**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	0	610	26	46	0	175	231	0	42	0	0	0	341	53	0	0	0	0	0
4:15 PM - 5:15 PM	0	0	699	50	25	0	265	272	0	19	0	0	0	355	17	0	0	0	0	0

	PHF	Trucks
AM	0.952	10.2%
PM	0.945	3.7%



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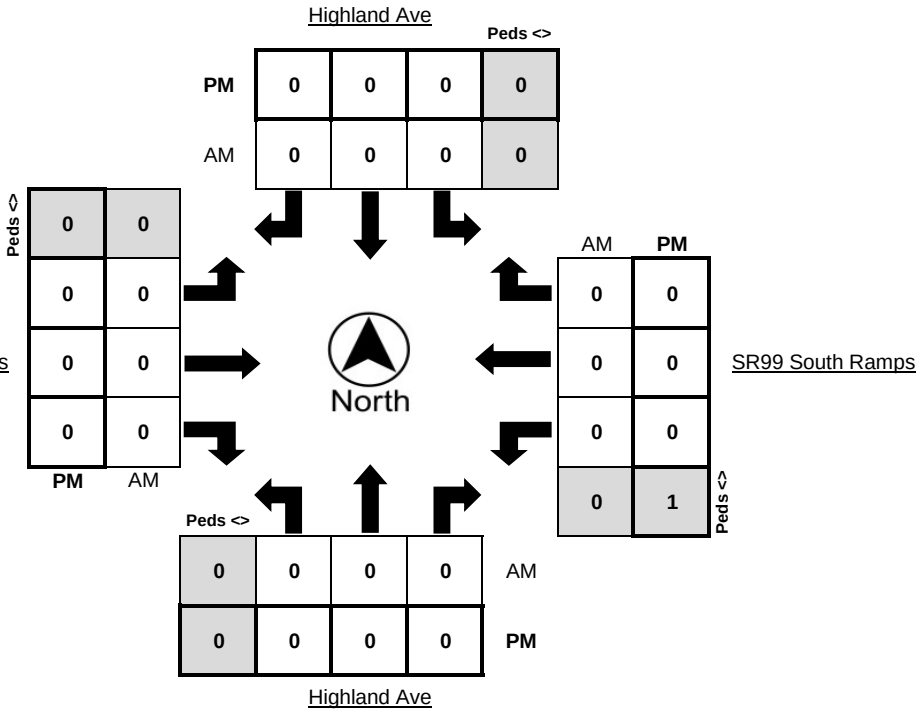
LOCATION Highland Ave @ SR 99 SB Ramps
LATITUDE 36.5749
COUNTY Fresno
LONGITUDE -119.6287
COLLECTION DATE Wednesday, November 30, 2022
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	0	1



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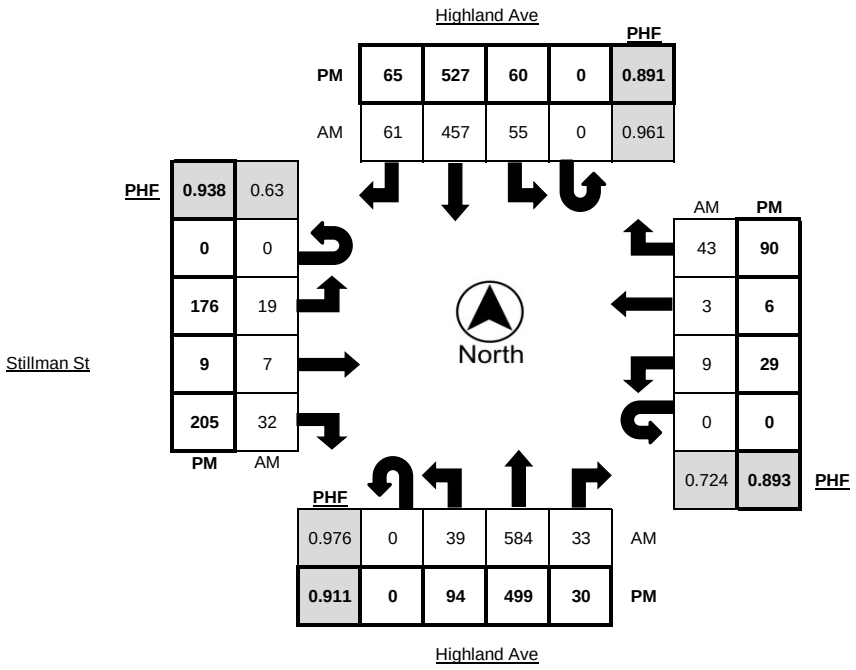
LOCATION Highland Ave @ Stillman St
LATITUDE 36.5726
COUNTY Fresno
LONGITUDE -119.6288
COLLECTION DATE Wednesday, November 30, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	7	138	5	8	0	10	112	7	13	0	7	0	5	2	0	3	1	10	1
7:15 AM - 7:30 AM	0	3	158	4	8	0	9	134	5	19	0	5	3	8	0	0	1	1	11	1
7:30 AM - 7:45 AM	0	8	151	9	9	0	17	114	13	16	0	2	1	8	1	0	1	0	12	1
7:45 AM - 8:00 AM	0	13	142	9	12	0	15	113	21	14	0	2	0	6	2	0	2	0	17	1
8:00 AM - 8:15 AM	0	15	133	11	11	0	14	96	22	14	0	10	3	10	1	0	5	2	3	0
8:15 AM - 8:30 AM	0	26	113	7	13	0	9	108	33	16	0	9	0	9	0	0	6	0	14	0
8:30 AM - 8:45 AM	0	14	82	14	9	0	10	88	24	15	0	11	1	8	0	0	4	0	7	1
8:45 AM - 9:00 AM	0	25	87	17	13	0	24	72	19	16	0	13	0	16	0	0	1	1	19	0
TOTAL	**0**	**111**	**1004**	**76**	**83**	**0**	**108**	**837**	**144**	**123**	**0**	**59**	**8**	**70**	**6**	**0**	**23**	**5**	**93**	**5**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	33	108	9	7	0	17	106	18	10	0	39	1	43	0	0	9	1	15	0
4:15 PM - 4:30 PM	0	23	113	15	11	0	12	108	17	5	0	41	6	43	1	0	11	1	31	0
4:30 PM - 4:45 PM	0	28	131	6	8	0	17	146	20	6	0	37	3	51	0	0	8	0	20	0
4:45 PM - 5:00 PM	0	25	136	10	6	0	19	138	13	6	0	43	1	56	0	0	7	2	20	1
5:00 PM - 5:15 PM	0	20	119	7	5	0	5	116	19	9	0	49	4	42	0	0	8	1	24	0
5:15 PM - 5:30 PM	0	21	113	7	4	0	19	127	13	6	0	47	1	56	0	0	6	3	26	0
5:30 PM - 5:45 PM	0	10	128	8	7	0	5	116	9	4	0	67	2	39	0	0	11	0	11	0
5:45 PM - 6:00 PM	0	12	84	5	4	0	10	108	15	6	0	30	2	36	0	0	4	2	8	0
TOTAL	**0**	**172**	**932**	**67**	**52**	**0**	**104**	**965**	**124**	**52**	**0**	**353**	**20**	**366**	**1**	**0**	**64**	**10**	**155**	**1**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	0	39	584	33	40	0	55	457	61	63	0	19	7	32	4	0	9	3	43	3
4:30 PM - 5:30 PM	0	94	499	30	23	0	60	527	65	27	0	176	9	205	0	0	29	6	90	1

	PHF	Trucks
AM	0.981	8.2%
PM	0.952	2.8%



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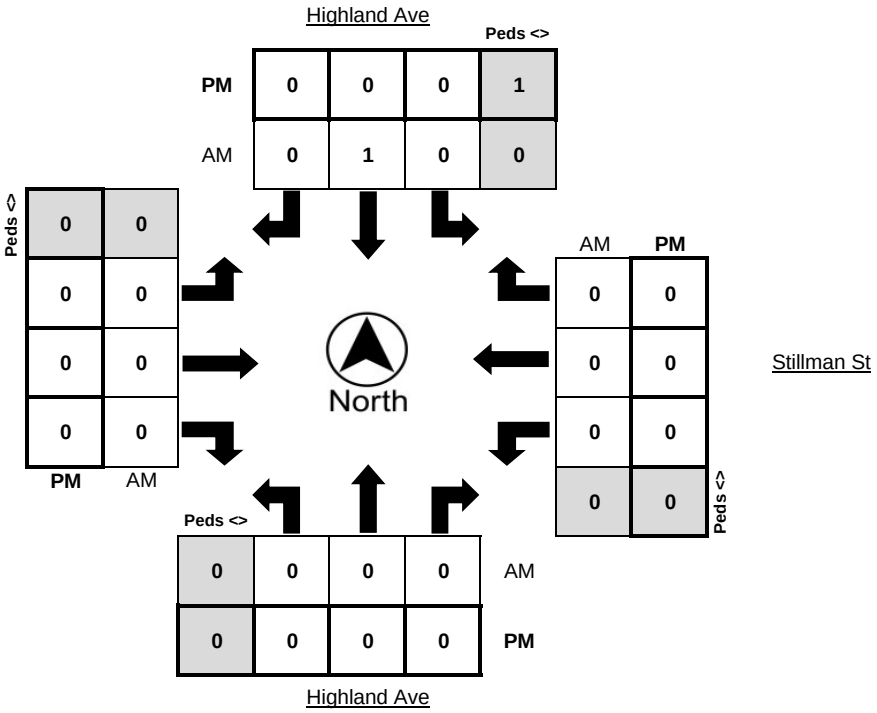
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WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	1	0
PM Peak Total	**0**	**1**



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

JLB Traffic Engineering, Inc.
516 W. Shaw Ave, Suite 103
Fresno, CA 93704

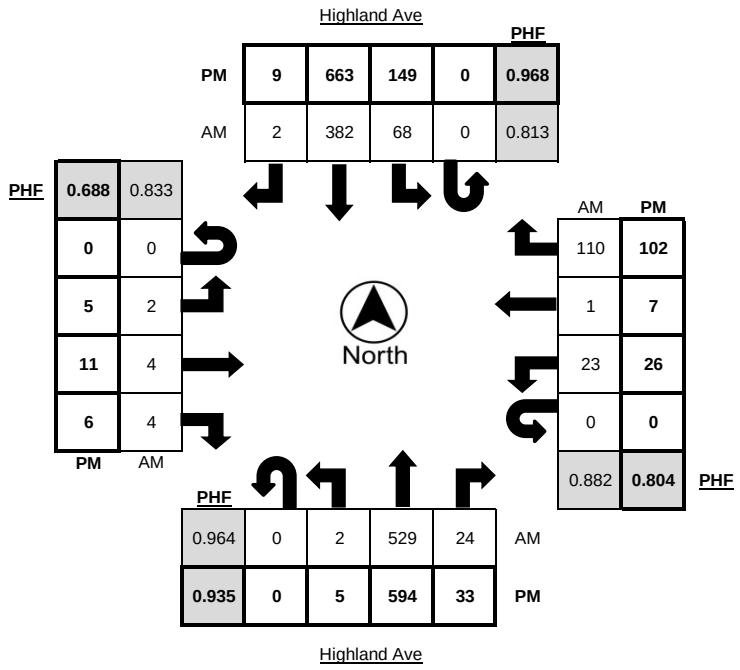
LOCATION Highland Ave @ Rose Ave
LATITUDE 36.5688
COUNTY Fresno
LONGITUDE -119.6288
COLLECTION DATE Thursday, September 29, 2022
WEATHER Clear

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:00 AM - 7:15 AM	0	1	120	3	3	0	19	114	0	18	0	1	0	0	0	0	1	0	12	0
7:15 AM - 7:30 AM	0	1	142	4	9	0	11	109	2	17	0	2	0	1	1	0	5	0	25	0
7:30 AM - 7:45 AM	0	0	130	5	7	0	20	85	3	6	0	1	3	0	0	0	7	2	29	1
7:45 AM - 8:00 AM	0	1	121	11	12	0	22	89	0	13	0	0	2	1	0	0	5	0	33	0
8:00 AM - 8:15 AM	0	0	134	7	12	0	19	79	1	11	0	0	1	2	0	0	6	0	26	0
8:15 AM - 8:30 AM	0	0	141	3	16	0	18	85	0	6	0	1	0	0	0	0	10	1	26	0
8:30 AM - 8:45 AM	0	1	133	3	11	0	9	129	1	23	0	1	1	1	1	0	2	0	25	0
8:45 AM - 9:00 AM	0	2	117	5	13	0	11	88	1	9	0	0	0	3	0	0	3	2	21	0
TOTAL	**0**	**6**	**1038**	**41**	**83**	**0**	**129**	**778**	**8**	**103**	**0**	**6**	**7**	**8**	**2**	**0**	**39**	**5**	**197**	**1**

	Northbound					Southbound					Eastbound					Westbound				
Time	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
4:00 PM - 4:15 PM	0	0	145	10	13	0	27	133	3	6	0	3	4	1	1	0	4	4	32	0
4:15 PM - 4:30 PM	0	0	164	5	8	0	33	138	6	4	0	1	1	0	0	0	0	1	17	0
4:30 PM - 4:45 PM	0	4	131	12	6	0	37	153	3	4	0	1	3	4	0	0	7	1	26	0
4:45 PM - 5:00 PM	0	1	158	10	4	0	42	162	2	7	0	0	1	1	0	0	3	3	27	0
5:00 PM - 5:15 PM	0	0	160	5	7	0	32	176	2	8	0	1	3	0	0	0	6	0	20	0
5:15 PM - 5:30 PM	0	0	145	6	7	0	38	172	2	4	0	3	4	1	0	0	10	3	29	0
5:30 PM - 5:45 PM	0	0	127	4	9	0	29	173	2	5	0	2	2	2	0	0	8	3	23	0
5:45 PM - 6:00 PM	0	0	127	7	12	0	31	149	4	3	0	1	2	0	0	0	4	0	18	0
TOTAL	**0**	**5**	**1157**	**59**	**66**	**0**	**269**	**1256**	**24**	**41**	**0**	**12**	**20**	**9**	**1**	**0**	**42**	**15**	**192**	**0**

	Northbound					Southbound					Eastbound					Westbound				
PEAK HOUR	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**	**U-Turn**	**Left**	**Thru**	**Right**	**Trucks**
7:45 AM - 8:45 AM	0	2	529	24	51	0	68	382	2	53	0	2	4	4	1	0	23	1	110	0
4:30 PM - 5:30 PM	0	5	594	33	24	0	149	663	9	23	0	5	11	6	0	0	26	7	102	0

	PHF	Trucks
AM	0.940	9.1%
PM	0.975	2.9%



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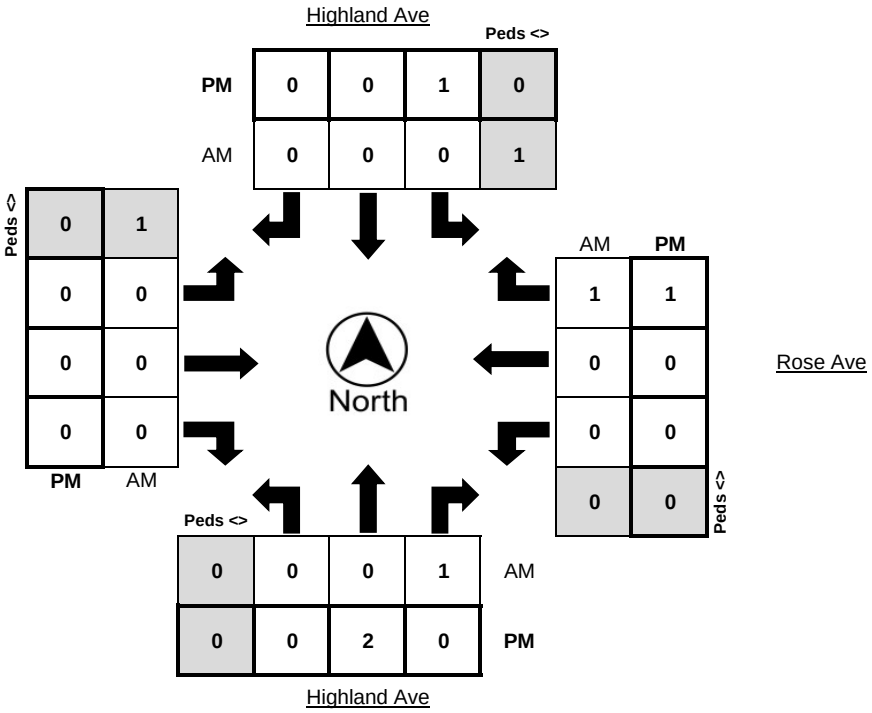
LOCATION Highland Ave @ Rose Ave
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COLLECTION DATE Thursday, September 29, 2022
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	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
8:15 AM - 8:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**1**	**1**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**2**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:45 AM - 8:45 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1
4:30 PM - 5:30 PM	0	2	0	0	1	0	0	0	0	0	0	0	0	0	1	0

	Bikes	Peds
AM Peak Total	2	2
PM Peak Total	4	0



Appendix C: Traffic Modeling

April 10, 2023

Kai Han, TE
Fresno Council of Governments
2035 Tulare Street, Suite 201
Fresno, CA 93721

Via Email Only: khan@fresnocog.org

Subject: ***Traffic Modeling Request for the Preparation of a Traffic Impact Analysis and Vehicle Miles Traveled Analysis for the Selma Development in the City of Selma (JLB Project 001-009)***

Dear Mr. Han,

JLB Traffic Engineering, Inc. (JLB) hereby requests traffic modeling for the preparation of a **Traffic Impact Analysis (TIA) and Vehicle Miles Traveled (VMT) Analysis** for the proposed **Selma Development (Project)** located on the southwest quadrant of Highland Avenue and Floral Avenue in the City of Selma. The Project proposes to develop approximately 37.4 new acres with a mix of residential, commercial and park space. An aerial of the Project vicinity is shown in Exhibit A. The latest Project Site Plan is presented in Exhibit B.

The purpose of the TIA and VMT Analysis is to evaluate the potential on-site and off-site traffic impacts, identify short-term roadway and circulation needs, determine potential mitigation measures and identify any critical traffic issues that should be addressed in the on-going planning process.

Scenarios:

The following scenarios are requested:

1. Base Year 2019 (with Link and TAZ modifications)
2. Base Year 2019 with North-South Roads (with Link and TAZ modifications)
3. Base Year 2019 plus Project with North-South Roads (with Link and TAZ modifications)
4. Cumulative Year 2046 plus Project Select Zone (with Link and TAZ modifications)
5. Differences between model runs 4 and 3 above

Changes and/or additions to the Model Network or TAZ's

JLB reviewed the Fresno COG model network for the Base Year 2019 and Cumulative Year 2046. Based on this review, JLB requests the following link and TAZ network modifications. Details on the requested Link and TAZ modifications for Base Year 2019 and Cumulative Year 2046 are illustrated in Exhibit C.

LINK and TAZ MODIFICATIONS (Base Year 2019 Scenario Only):

1. Create Stillman Street approximately 1,375 feet north of Rose Avenue. (See Exhibit C for details).
   a. Between Node 32765 and Node 6844
      i. Classification: Collector
      ii. Lanes: Two lanes in the westbound direction and one lane in the eastbound direction
      iii. Speed: 35 MPH
   b. Between Node 6844 and Node 32771
      i. Classification: Collector
      ii. Lanes: Two lanes in each direction
      iii. Speed: 35 MPH

LINK and TAZ MODIFICATIONS (Base Year 2019 with north-south roads and Base Year 2019 plus Project with North-South roads):

1. Create Future Street approximately 1,350 feet west of the State Route 99 Southbound Off-Ramp at Floral Avenue. (See Exhibit C for details).
   a. Classification: Collector
   b. Lanes: One lane in each direction
   c. Speed: 35 MPH
2. Create North-South Street approximately 700 feet west of the State Route 99 Southbound Off-Ramp at Floral Avenue. (See Exhibit C for details).
   a. Classification: Collector
   b. Lanes: One lane in each direction
   c. Speed: 30 MPH
3. Create Stillman Street approximately 1,375 feet north of Rose Avenue. (See Exhibit C for details).
   a. Between Future Street and Node 6844
      i. Classification: Collector
      ii. Lanes: Two lanes in the westbound direction and one lane in the eastbound direction
      iii. Speed: 35 MPH
   b. Between Node 6844 and Node 32771
      i. Classification: Collector
      ii. Lanes: Two lanes in each direction
      iii. Speed: 35 MPH

LINK and TAZ MODIFICATIONS (All Scenarios):

1. Modify Floral Avenue as follows:
   a. Between Node 32774 and Node 6855
      i. Decrease the speed limit to 30 MPH in each direction.
   b. Between Node 42911 and Node 6851
      iv. Increase the number of lanes to 2 lanes in each direction.
   c. Between Node 6855 and Node 6857
      i. Increase the number of lanes to 2 lanes in the eastbound direction.

2. Modify State Route 43 as follows:
    a. Between Node 6858 and Node 6844
        i. Increase the number of lanes to 2 lanes in each direction.
3. Modify Node 1964 as follows:
    a. Remove existing TAZ connector to Node 28752
    b. Add a TAZ connector to the end of Stillman Street at Node 32771.

LINK and Project MODIFICATIONS (Cumulative Year 2046 plus Project Select Zone Scenario Only):

1. Modify Floral Avenue as follows:
    a. Between Node 32774 and Node 42911
        i. Increase the number of lanes to 2 lanes in each direction.
2. Modify Stillman Avenue as follows:
    a. Between Future Street and State Route 43
        i. Increase the number of lanes to 2 lanes in each direction.
3. Create Future Street approximately 1,350 feet west of the State Route 99 Southbound Off-Ramp at Floral Avenue. (See Exhibit C for details).
    a. Classification: Collector
    b. Lanes: Two lanes in each direction
    c. Speed: 35 MPH
4. Create North-South Street approximately 700 feet west of the State Route 99 Southbound Off-Ramp at Floral Avenue. (See Exhibit C for details).
    a. Classification: Collector
    b. Lanes: One lane in each direction
    c. Speed: 30 MPH
5. Create TAZ A (Project) generally located on the southwest quadrant of Highland Avenue and Floral Avenue. TAZ A shall have TAZ connectors to Future Street and North-South Street. (See Exhibit C for details).
6. Create TAZ B (Project) generally located on the southwest quadrant of Highland Avenue and Floral Avenue. TAZ B shall have TAZ connectors to Future Street and North-South Street. (See Exhibit C for details).
7. Create TAZ C (Project) generally located on the southwest quadrant of Highland Avenue and Floral Avenue. TAZ C shall have TAZ connectors to Future Street and North-South Street. (See Exhibit C for details).

TAZ A (Project) Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for TAZ A with trip generation rates for Strip Retail Plaza, Fast-Food Restaurant with Drive-Through Window. At buildout, TAZ A is estimated to generate a maximum of 7,384 daily, 637 AM peak hour and 587 PM peak hour trips.

Table I: (TAZ A) Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM (7-9) Peak Hour						PM (4-6) Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Strip Retail Plaza (<40k) (822)	24.000	k.s.f.	54.45	1,307	2.36	60	40	34	23	57	6.59	50	50	79	79	158
Fast-Food Restaurant with Drive-Through Window (934)	13.000	k.s.f.	467.48	6,077	44.60	51	49	296	284	580	33.03	52	48	223	206	429
Total Project Trips				**7,384**				**330**	**307**	**637**				**302**	**285**	**587**

Note: k.s.f. = Thousand Square Feet

TAZ B (Project) Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for TAZ B with trip generation rates for a Hotel. At buildout, TAZ B is estimated to generate a maximum of 719 daily, 41 AM peak hour and 53 PM peak hour trips.

Land Use (ITE Code)	Size	Unit	Daily		AM (7-9) Peak Hour						PM (4-6) Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Hotel (310)	90	Rooms	7.99	719	0.46	56	44	23	18	41	0.59	51	49	27	26	53
Total Project Trips				**719**				**23**	**18**	**41**				**27**	**26**	**53**

TAZ C (Project) Trip Generation

The trip generation rates for the proposed Project were obtained from the 11th Edition of the Trip Generation Manual published by the Institute of Transportation Engineers (ITE). Table I presents the trip generation for TAZ C with trip generation rates for Multifamily Housing, Senior Adult Housing, Affordable Housing and a Public Park. At buildout, TAZ C is estimated to generate a maximum of 3,280 daily, 209 AM peak hour and 266 PM peak hour trips.

Table III: (TAZ C) Project Trip Generation

Land Use (ITE Code)	Size	Unit	Daily		AM (7-9) Peak Hour						PM (4-6) Peak Hour					
			Rate	Total	Trip Rate	In %	Out %	In	Out	Total	Trip Rate	In %	Out %	In	Out	Total
Multifamily Housing (Low Rise) Not Close to Transit (220)	300	d.u.	6.74	2,022	0.40	24	76	29	91	120	0.51	63	37	96	57	153
Senior Adult Housing – Multifamily (252)	120	d.u.	3.24	389	0.20	34	66	8	16	24	0.25	56	44	17	13	30
Affordable Housing – Income Limits (223)	180	d.u.	4.81	866	0.36	29	71	19	46	65	0.46	59	41	49	34	83
Public Park (411)	3.350	Acres	0.78	3	0.02	59	41	0	0	0	0.11	55	45	0	0	0
Total Project Trips				**3,280**				**56**	**153**	**209**				**162**	**104**	**266**

Note: d.u. = Dwelling Units

Vehicle Miles Traveled

JLB would like to request to be provided with the Project's VMT in excel format or PDF format. The type of VMT outputs for the Proposed Project is as follows:

1. Retail Plaza and Fast-Food Restaurant – Regional VMT with and without the Project.
2. Hotel – VMT per service population (Population/Users + Employment) with and without the Project
3. Multifamily Housing and Senior Adult Housing – VMT per capita
4. Affordable Housing – Affordable Housing can be screened out based on the Fresno COG VMT Guidelines
5. Public Park – Public Park can be screened out based on the Fresno COG VMT Guidelines

Please feel welcome to contact me if you have any questions or require additional information. I can be reached by phone at (559) 317-6243, or via email at marndt@jlbtraffic.com.

Sincerely,

Matt Arndt
Engineer I/II

cc: Santosh Bhattarai, Fresno COG
Jose Luis Benavides, JLB Traffic Engineering, Inc.

JLB TRAFFIC ENGINEERING, INC.
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info@JLBtraffic.com
516 W. Shaw Ave., Ste. 103
Fresno, CA 93704
(559) 570-8991

Exhibit A – Project Site Aerial



Exhibit B – Project Site Plan

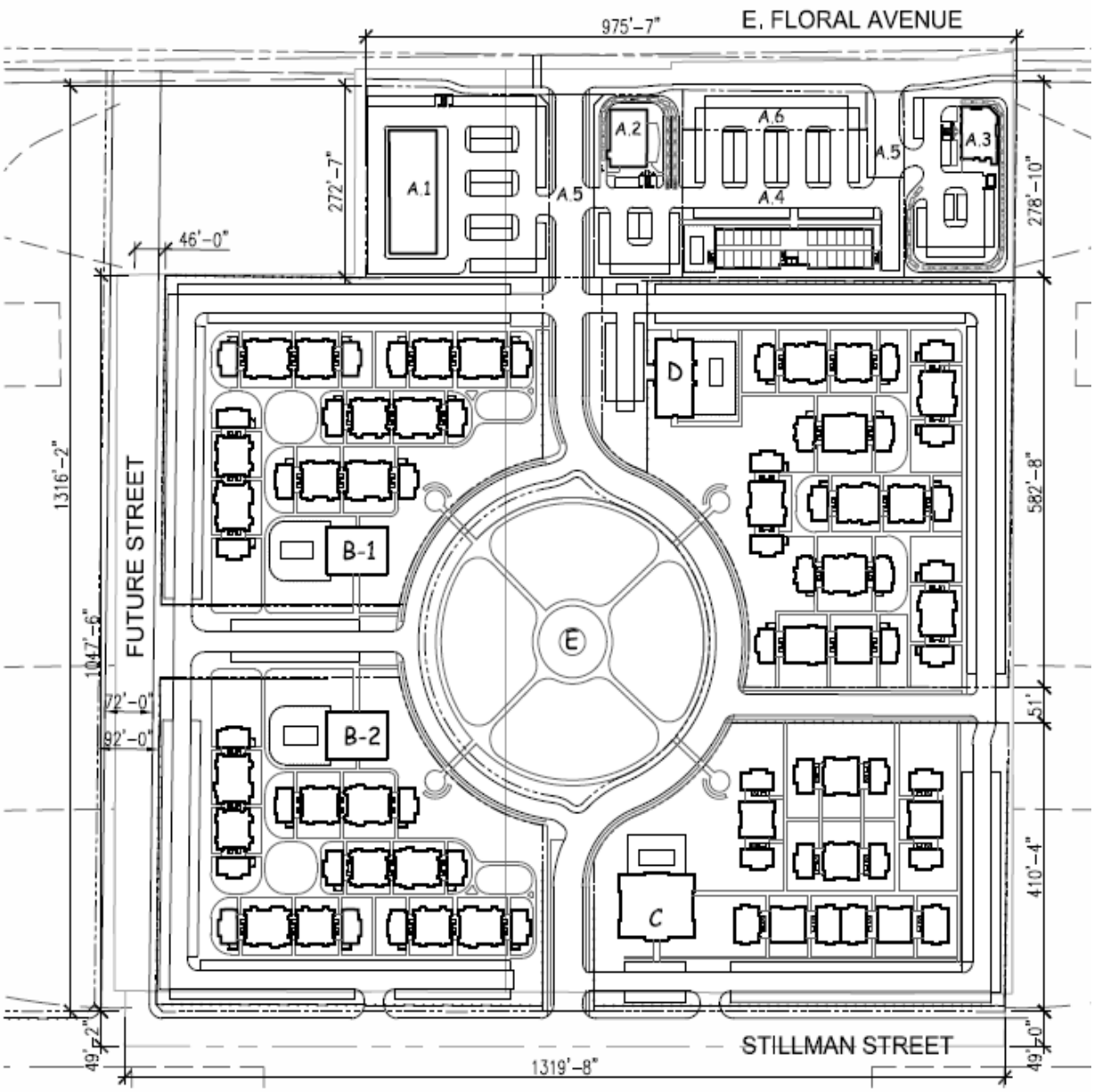
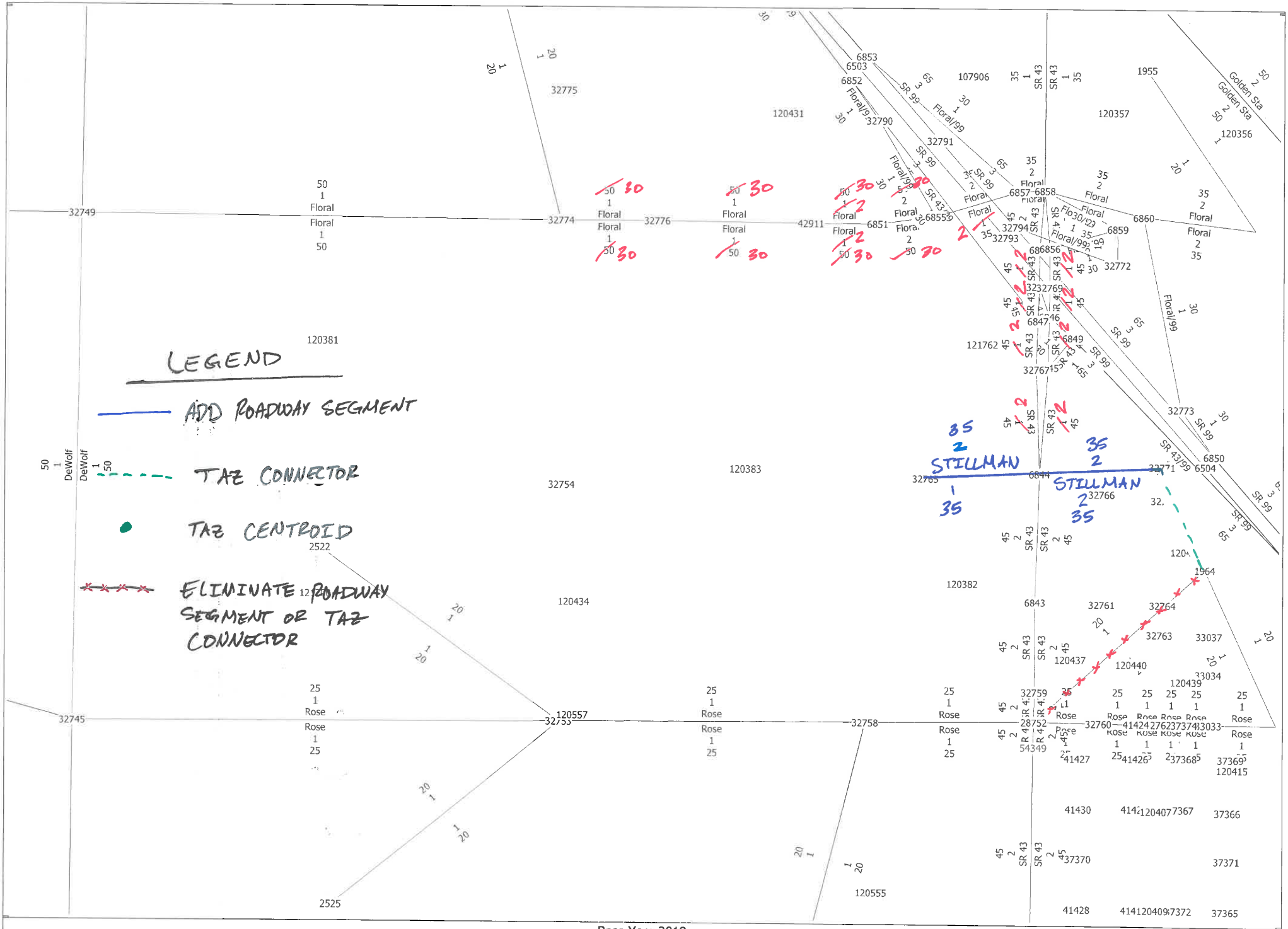


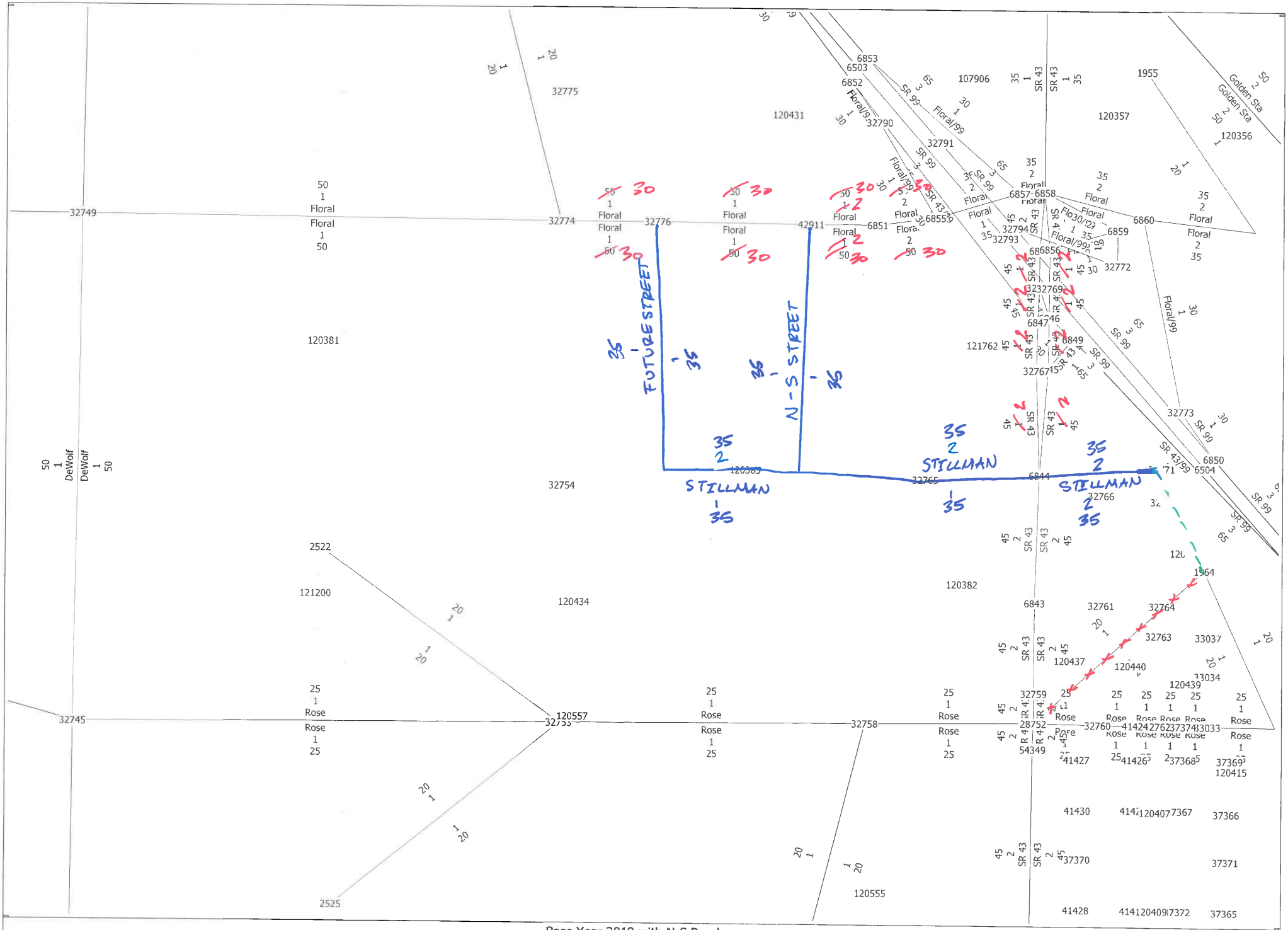
Exhibit C – Link and TAZ Modifications



Base Year 2019
Name, Lanes, Speed

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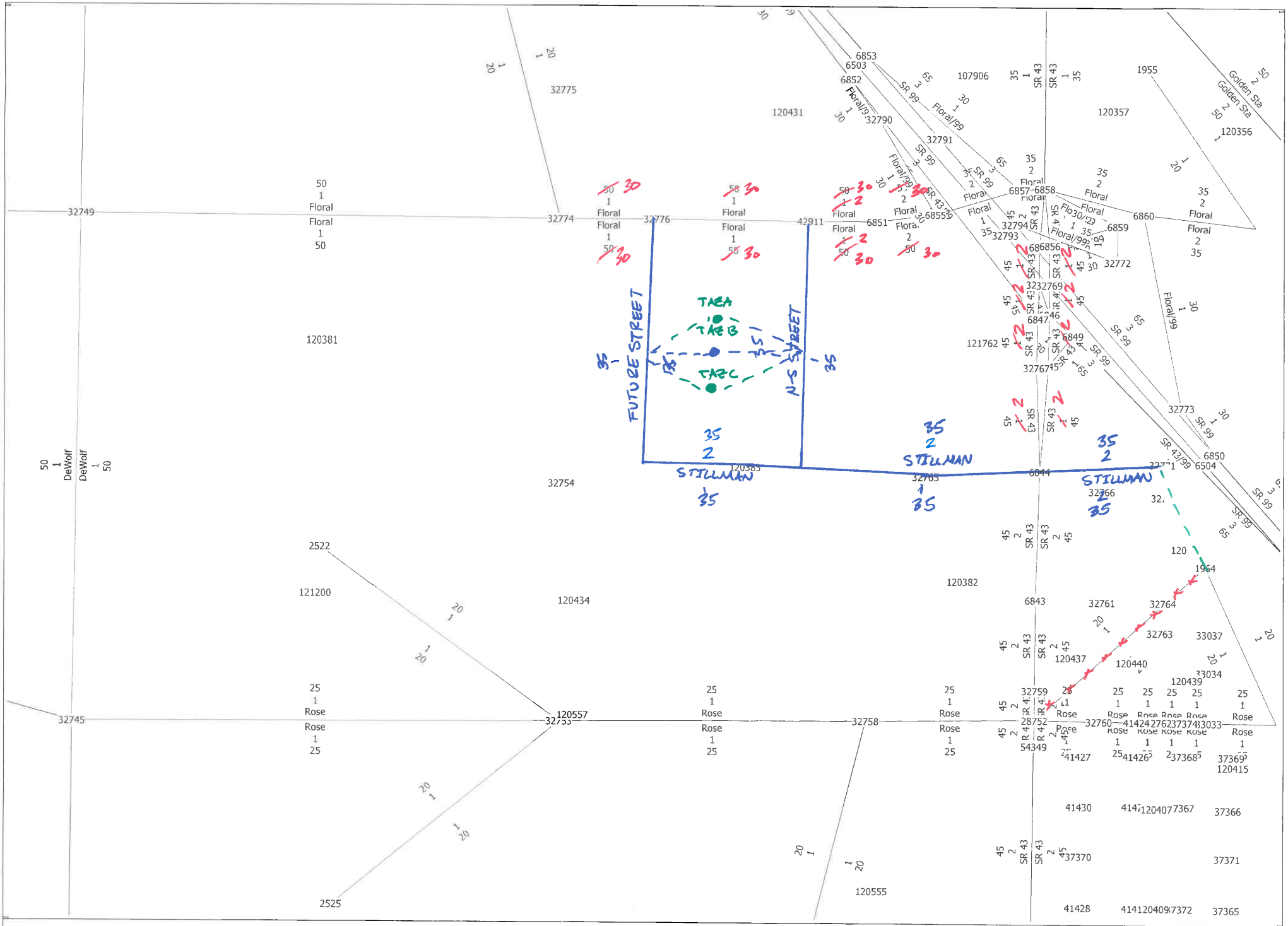
(Licensed to JLB Traffic Engineering, Inc)



Base Year 2019 with N-S Roads
Name, Lanes, Speed

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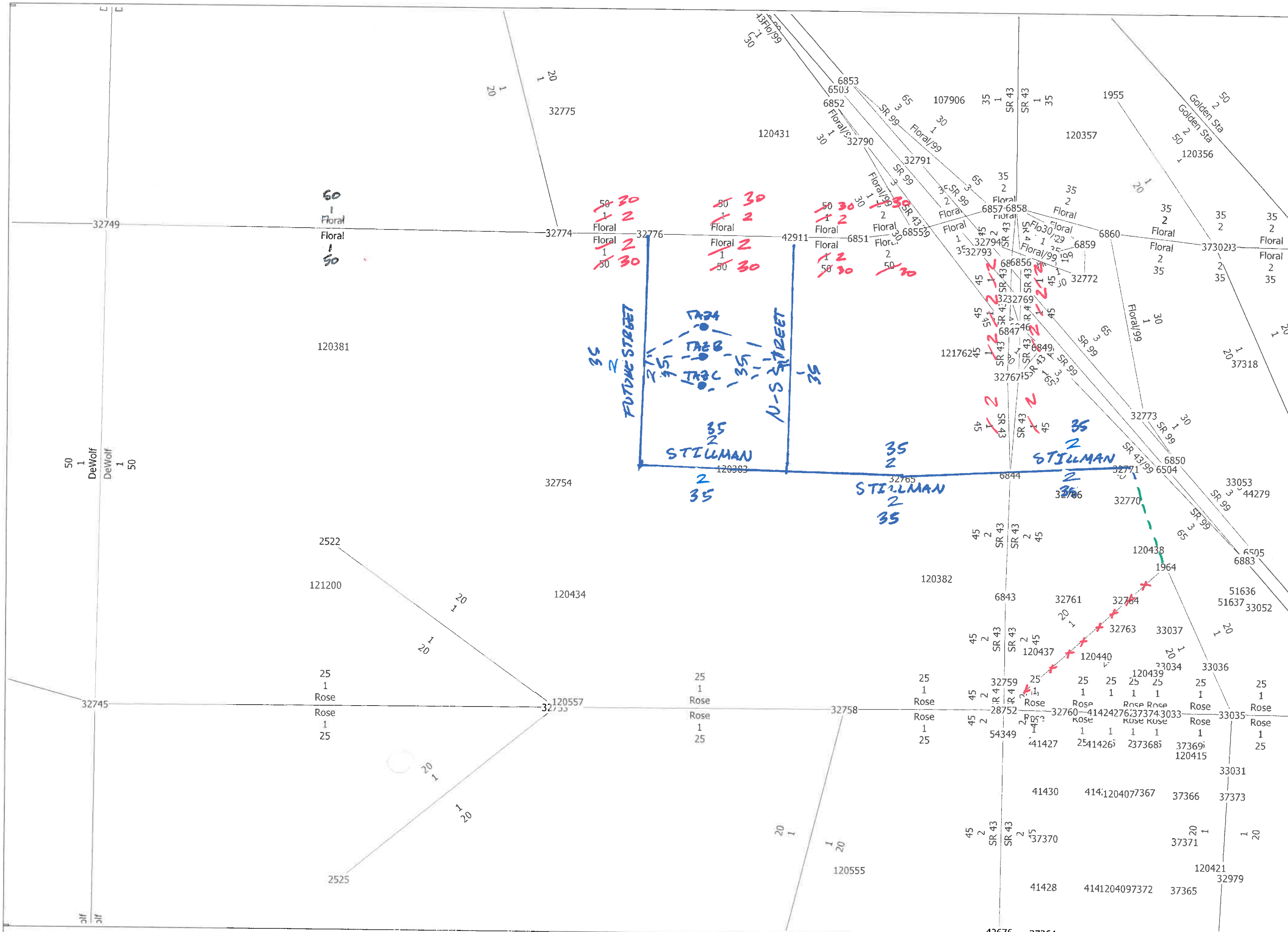
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Base Year 2019 with N-S Roads and Project Name, Lanes, Speed

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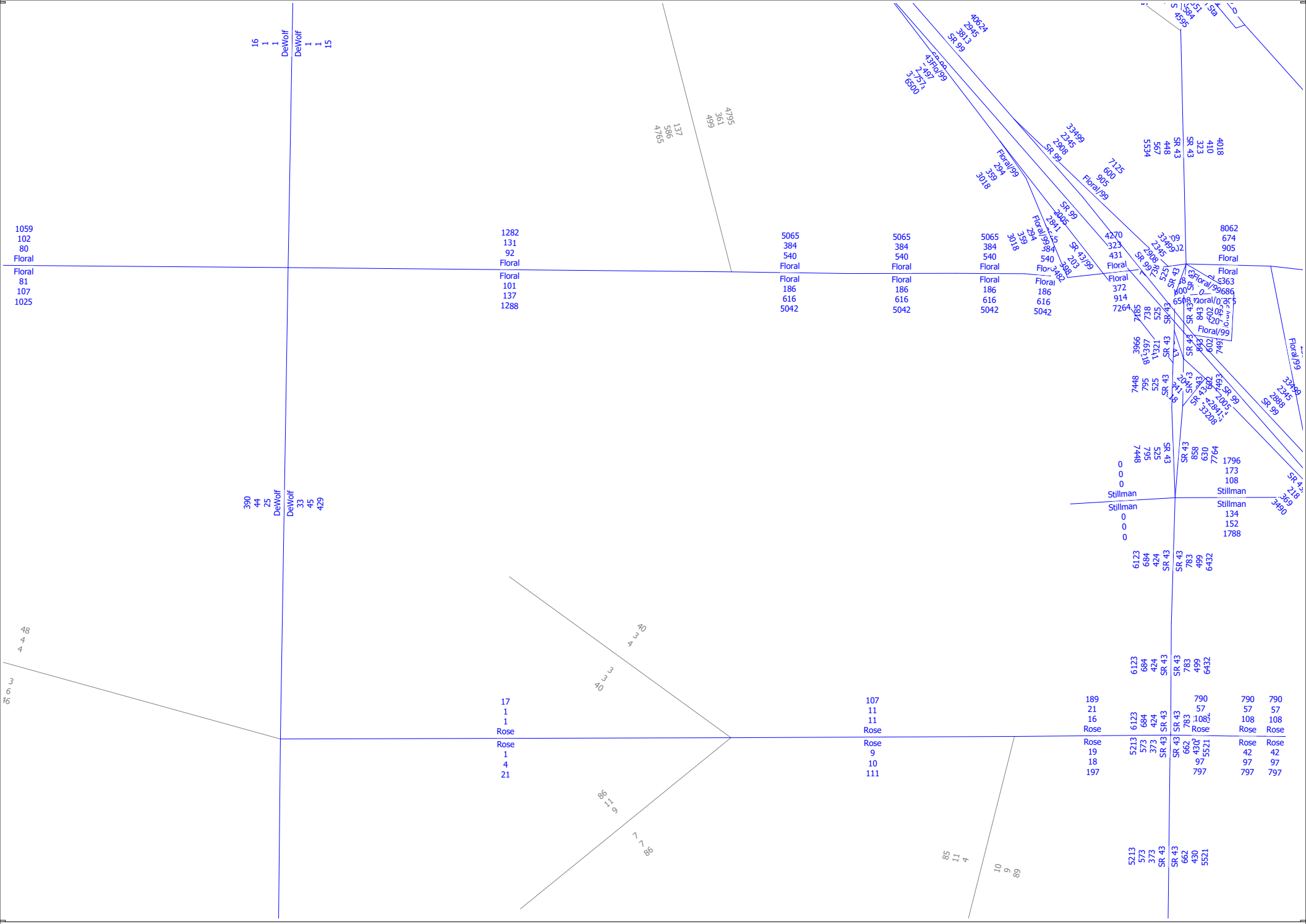
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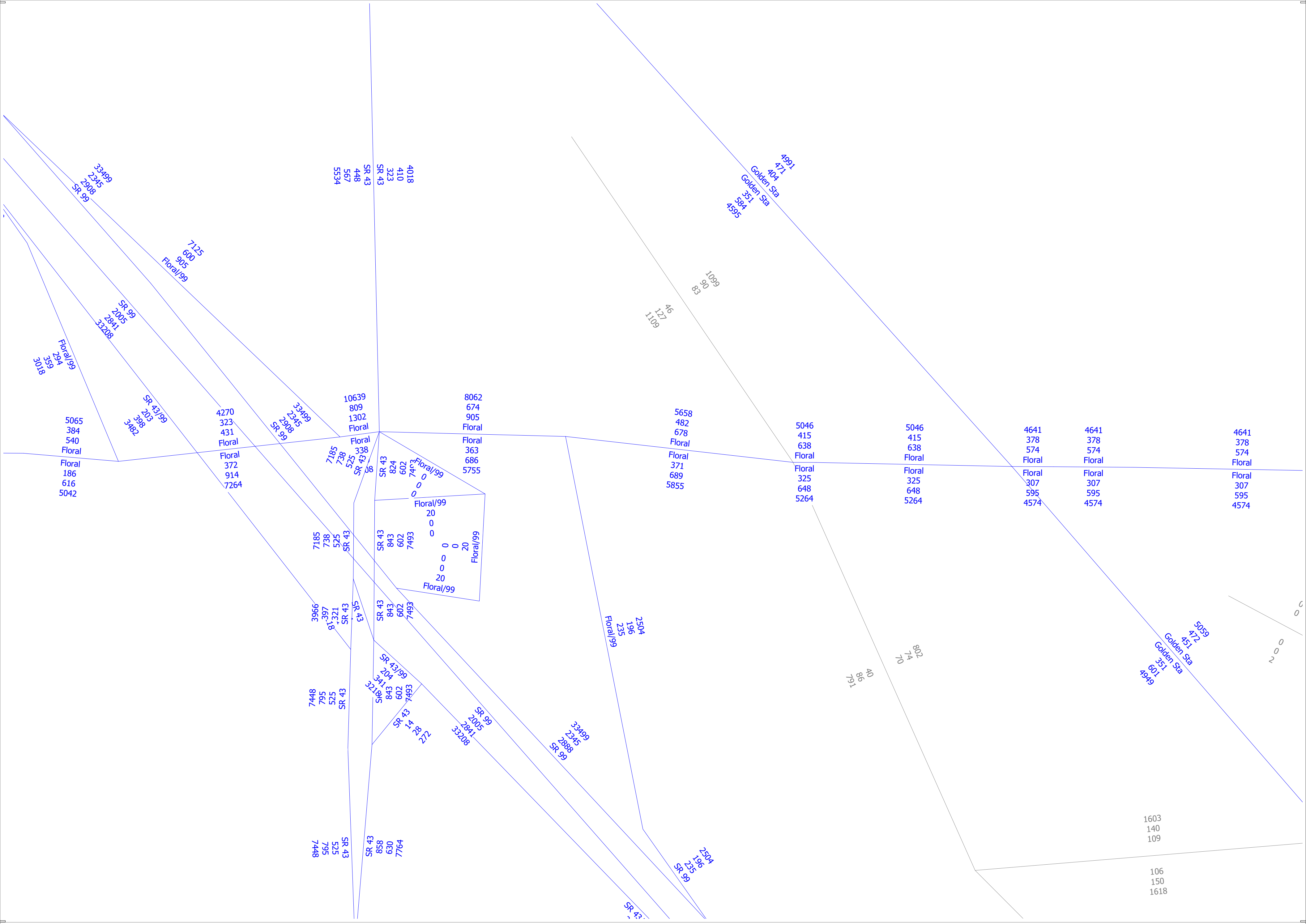
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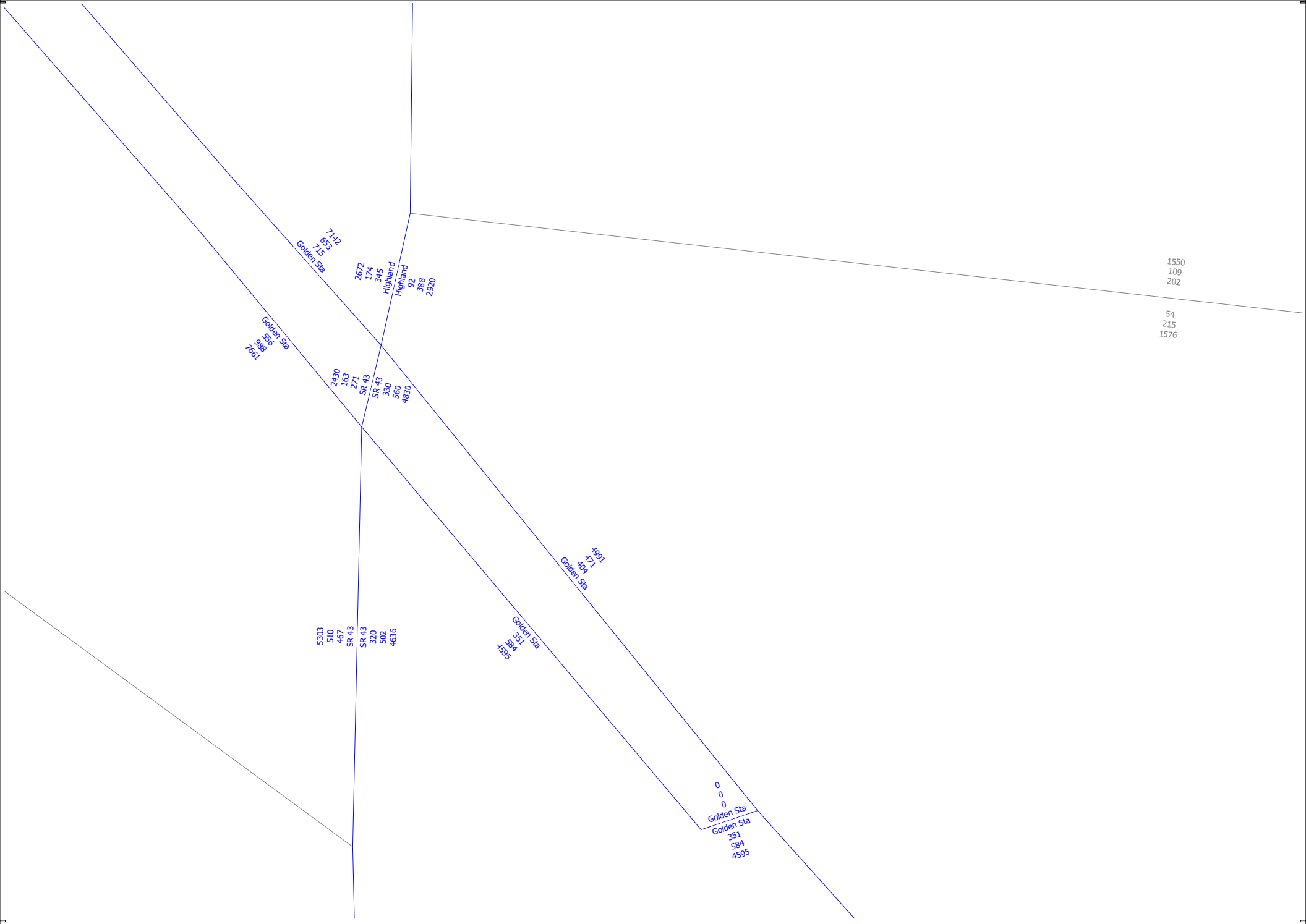
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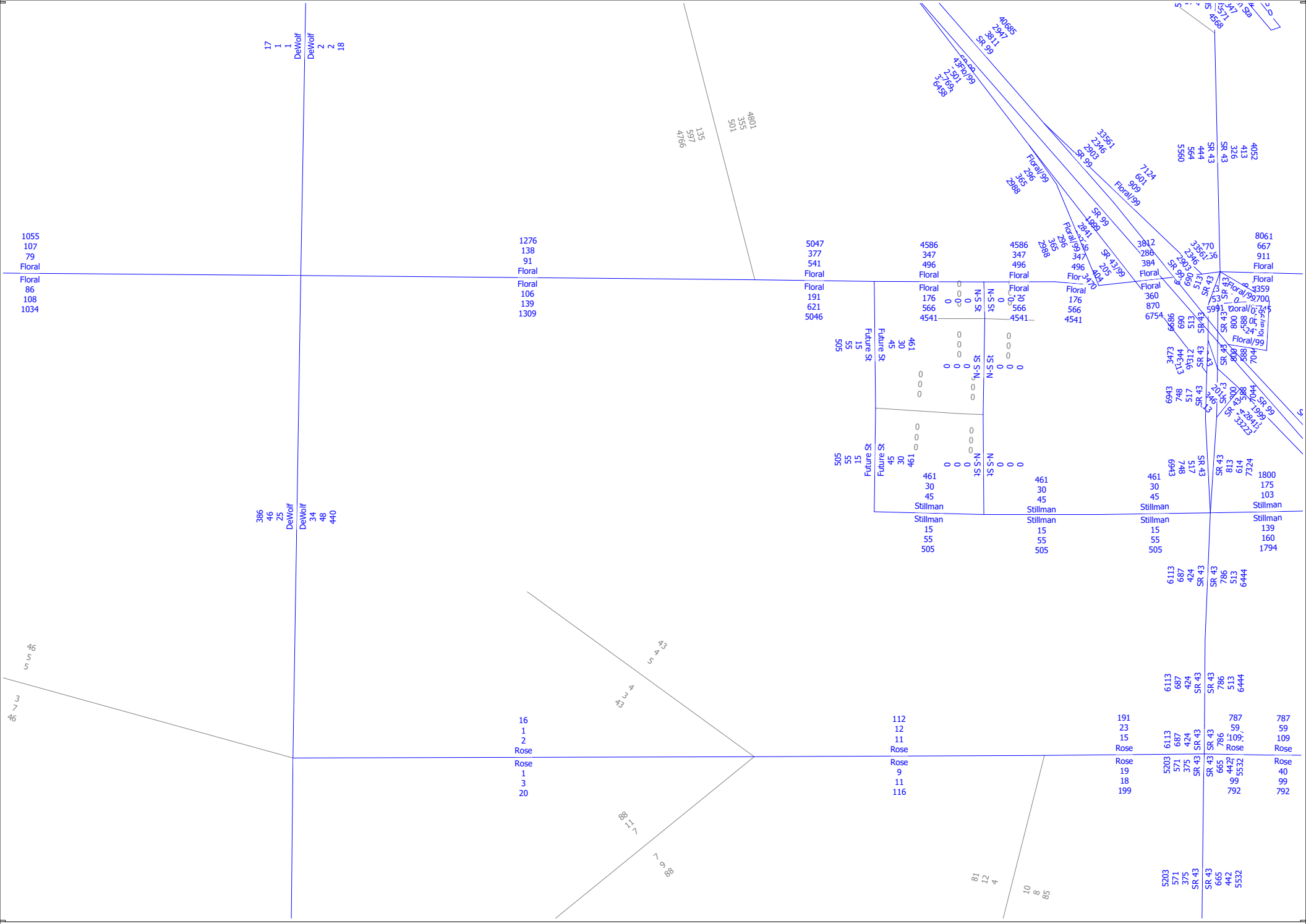
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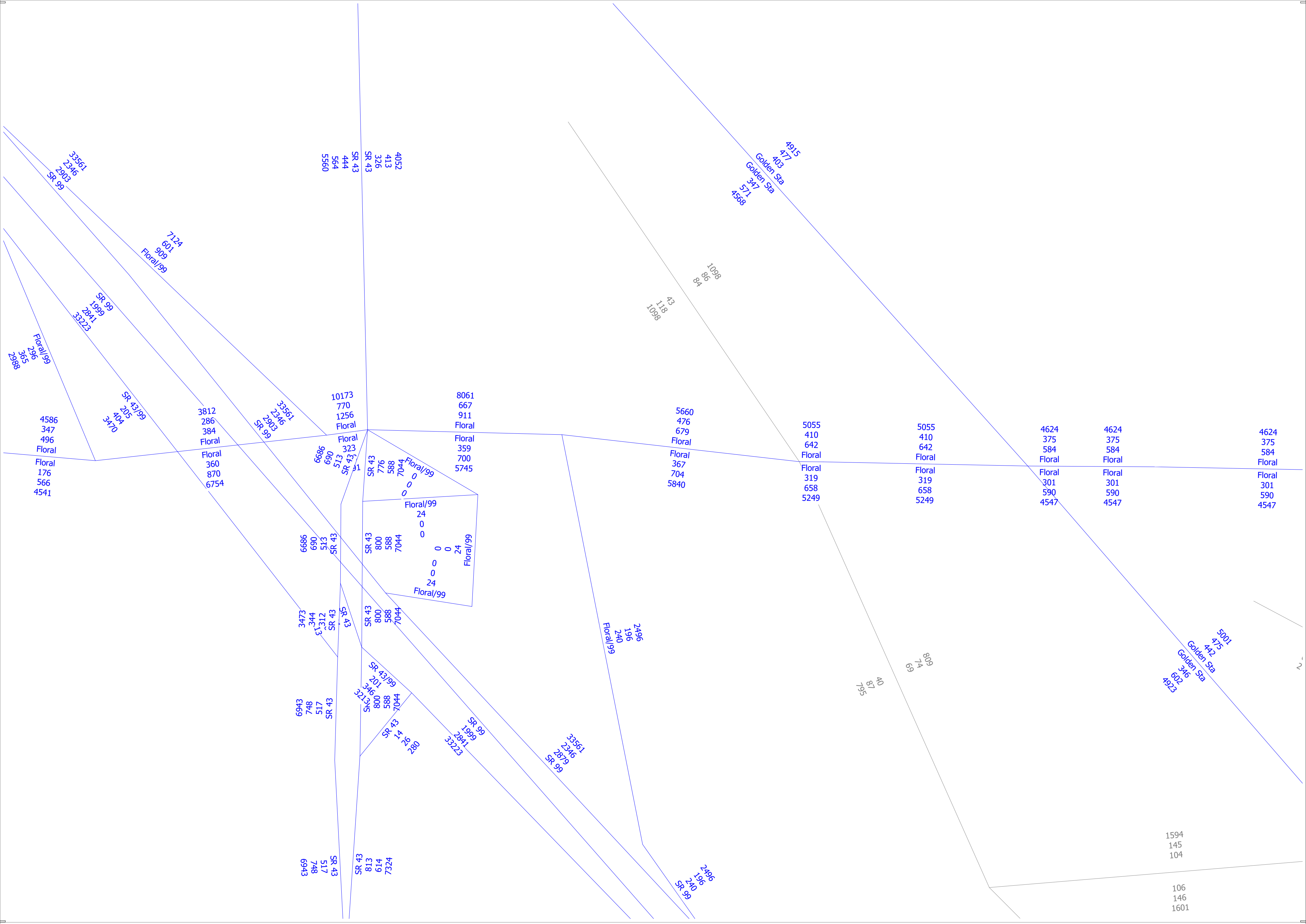
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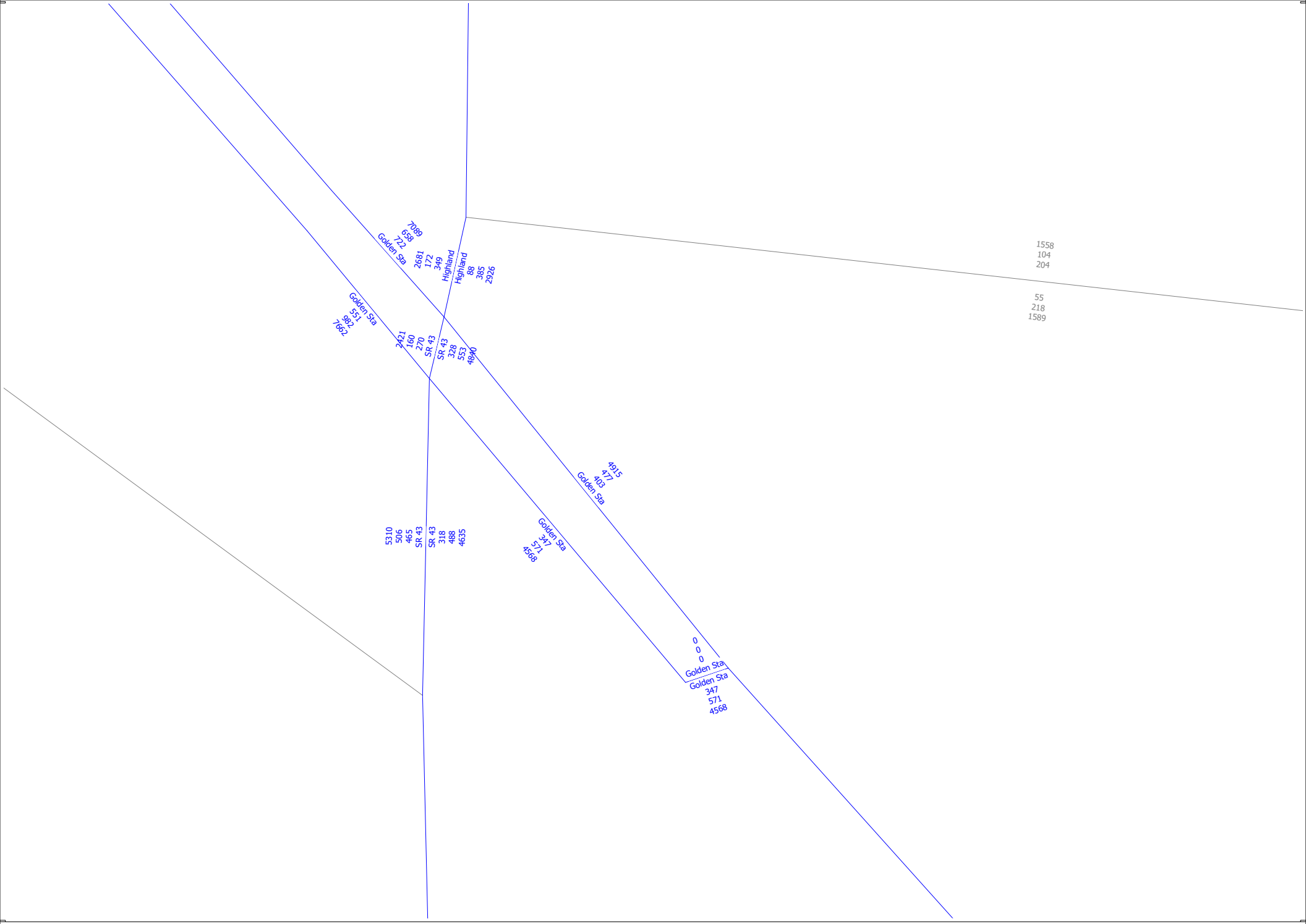
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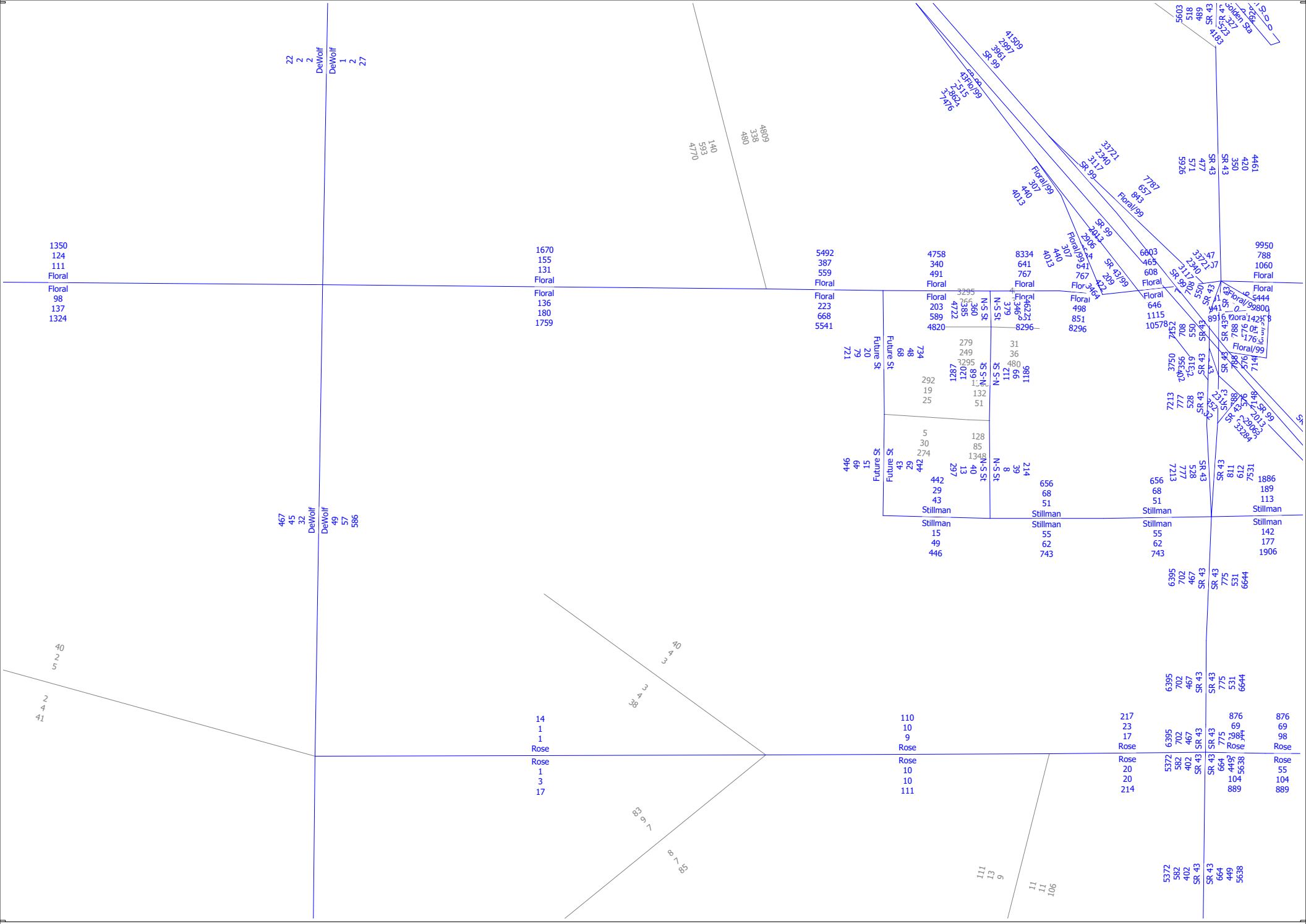
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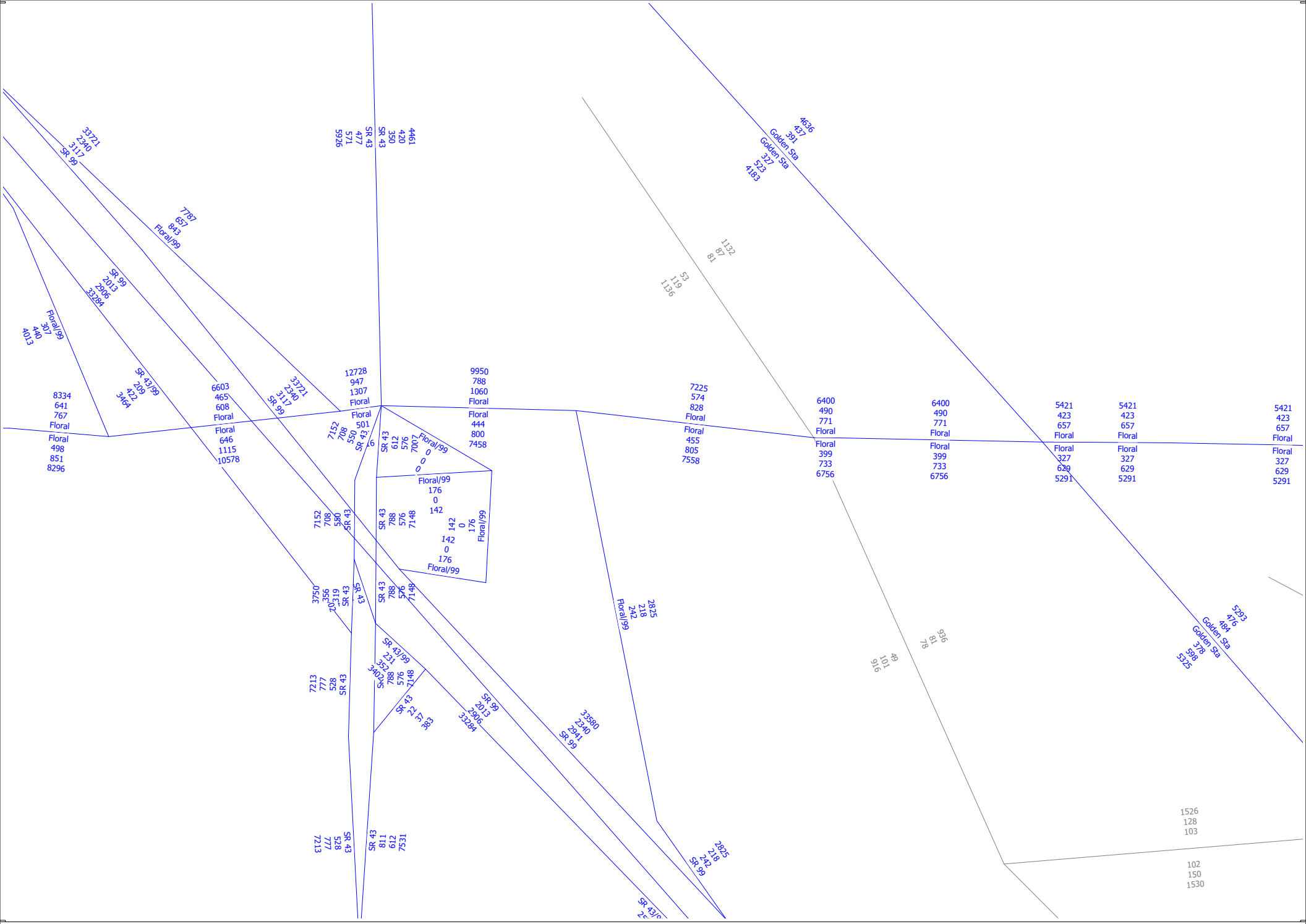
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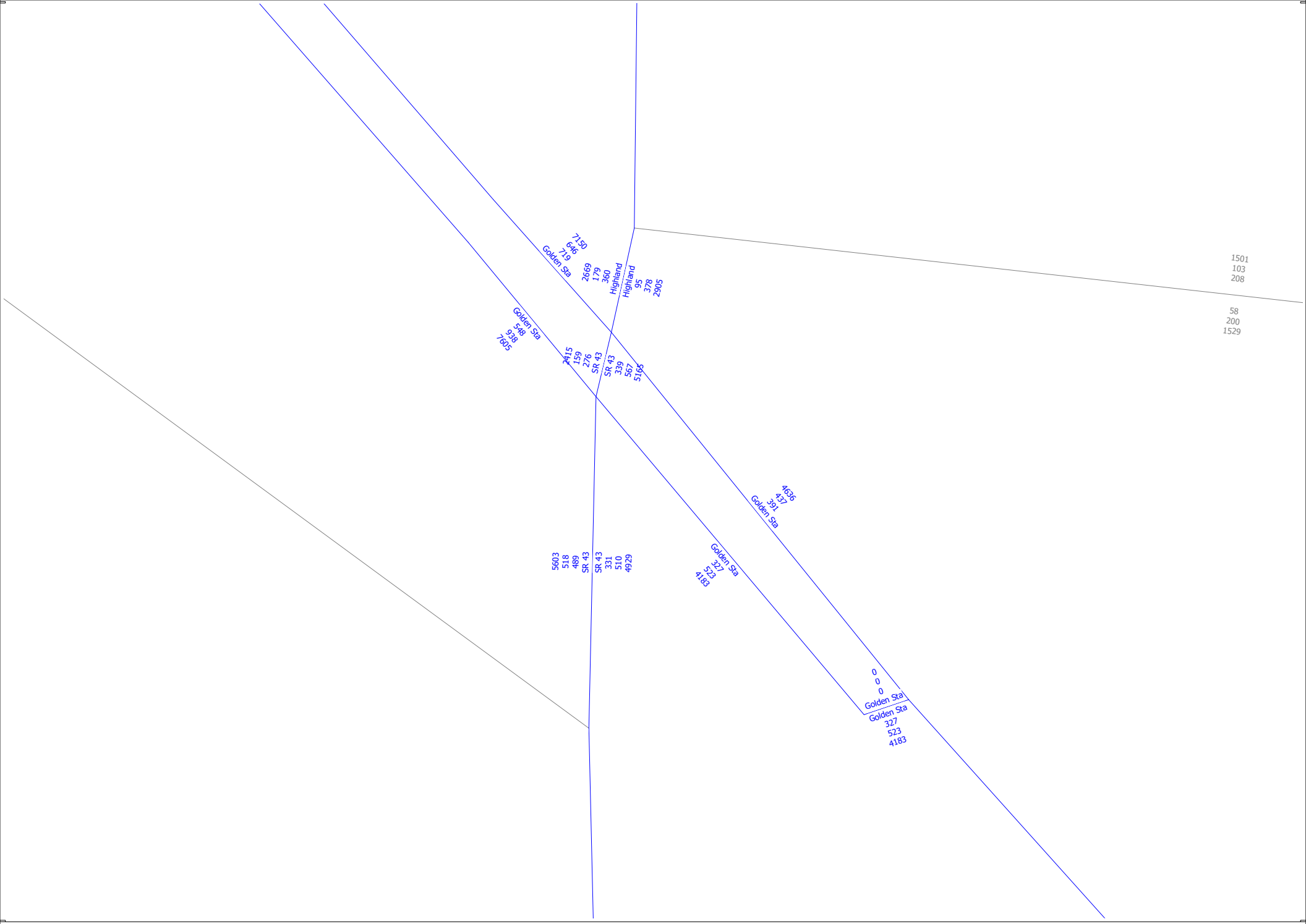
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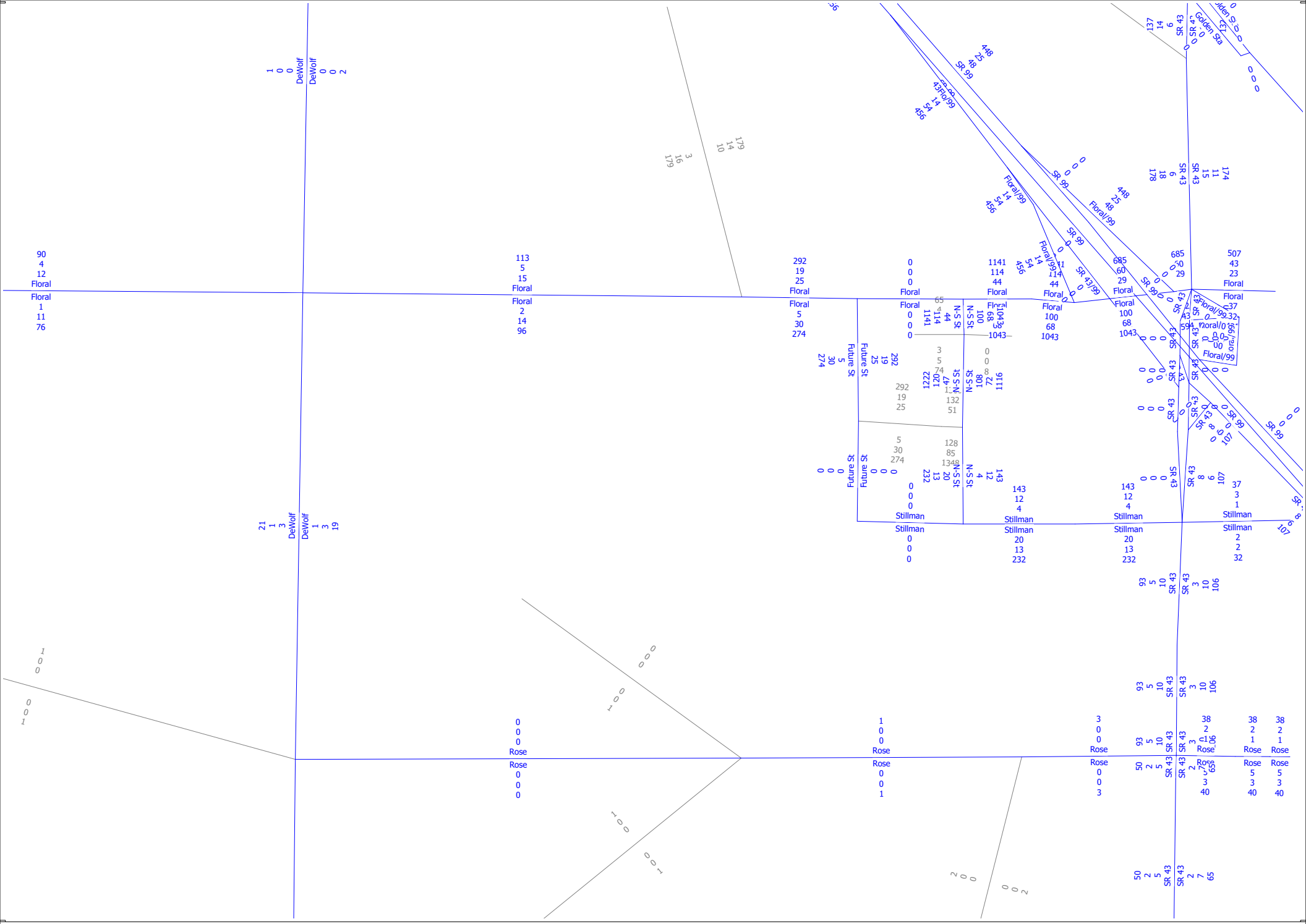
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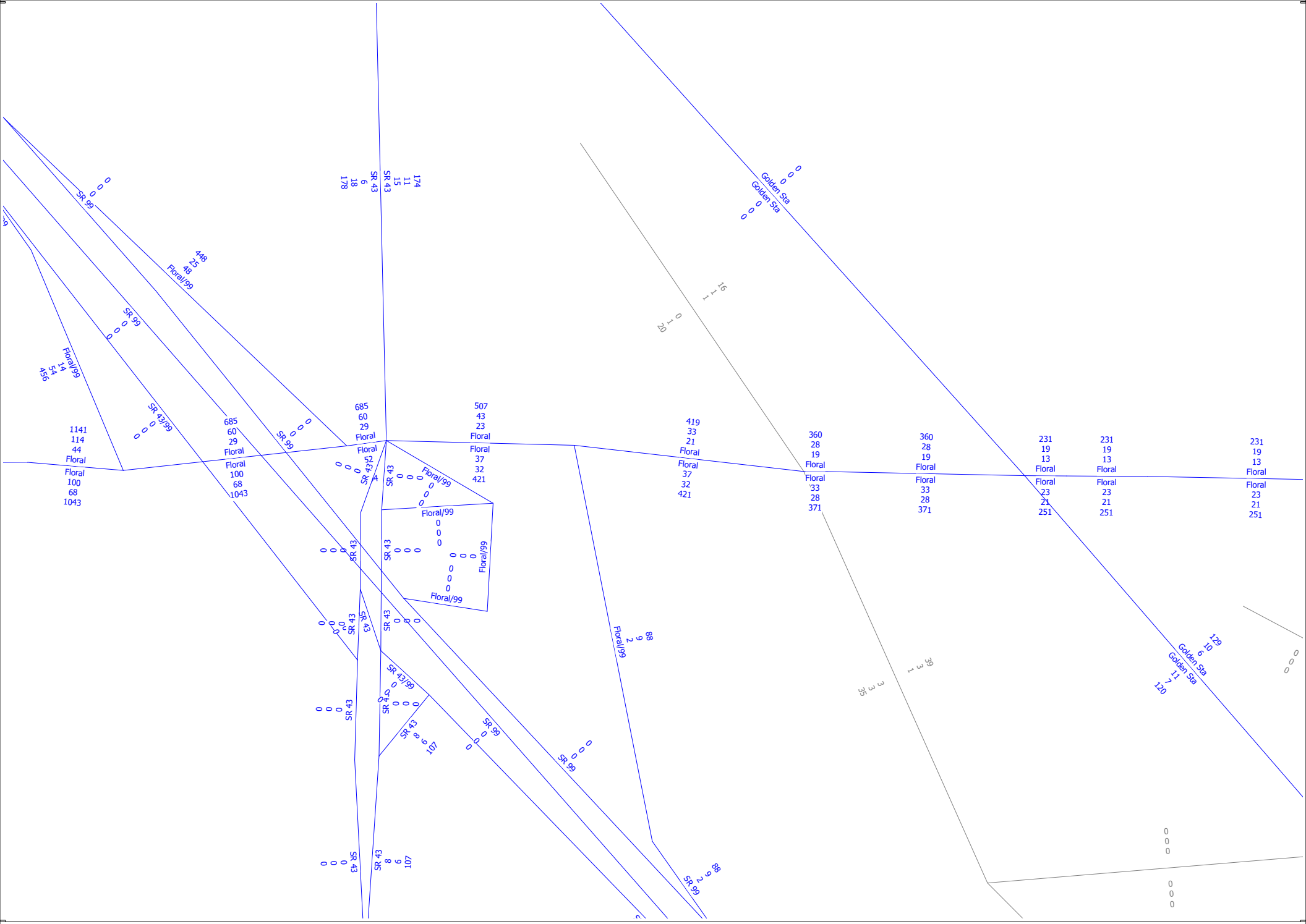
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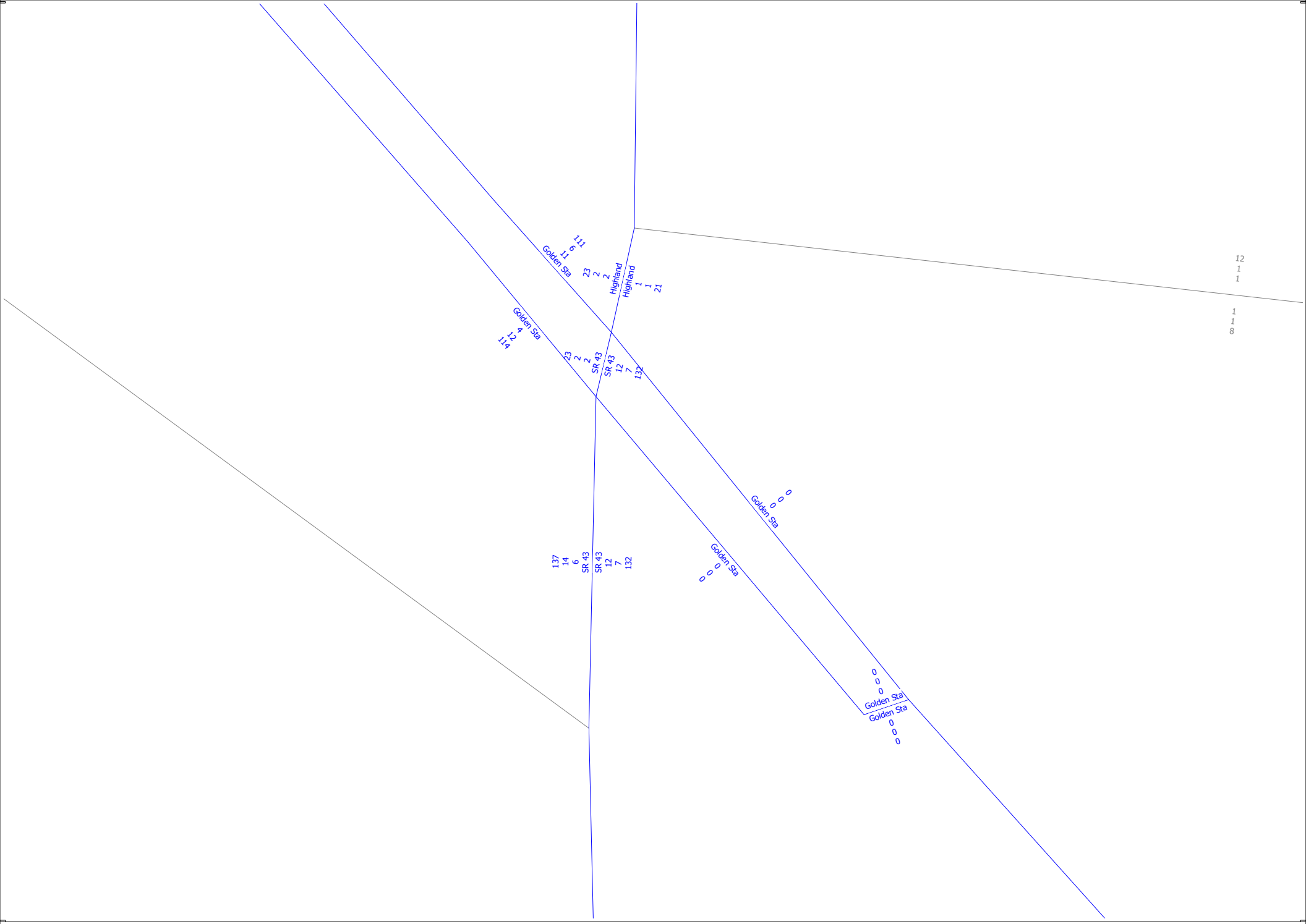
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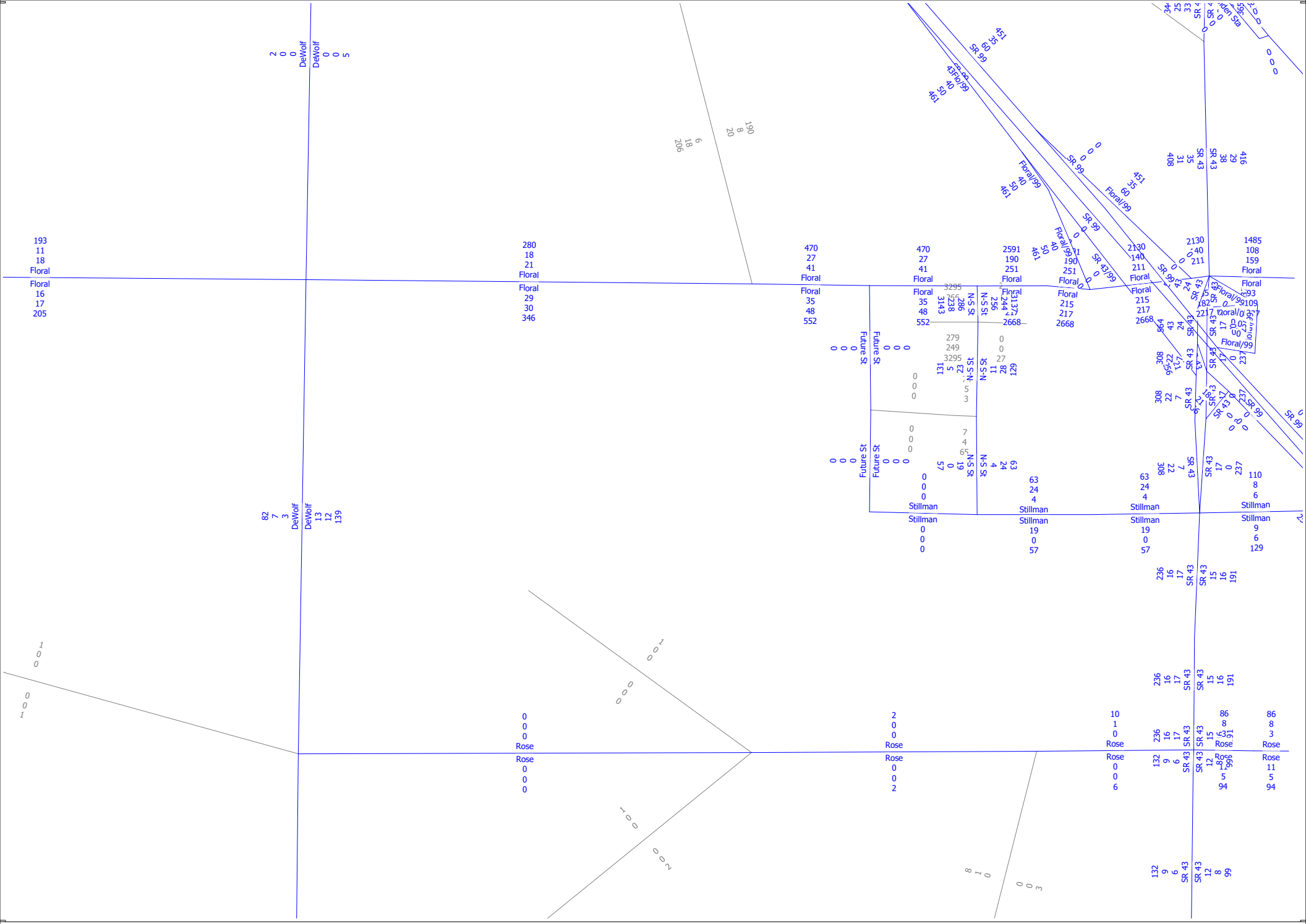
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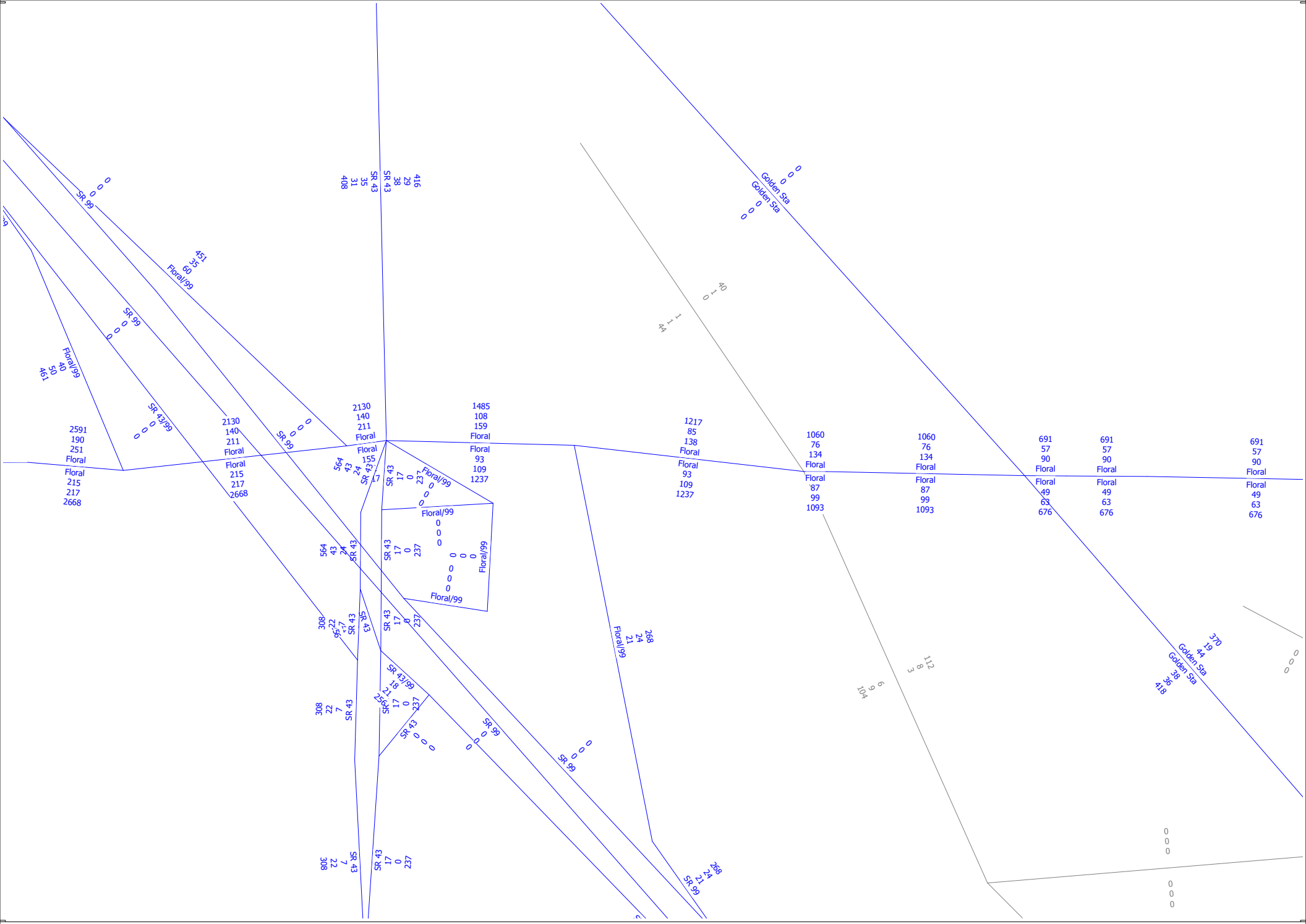
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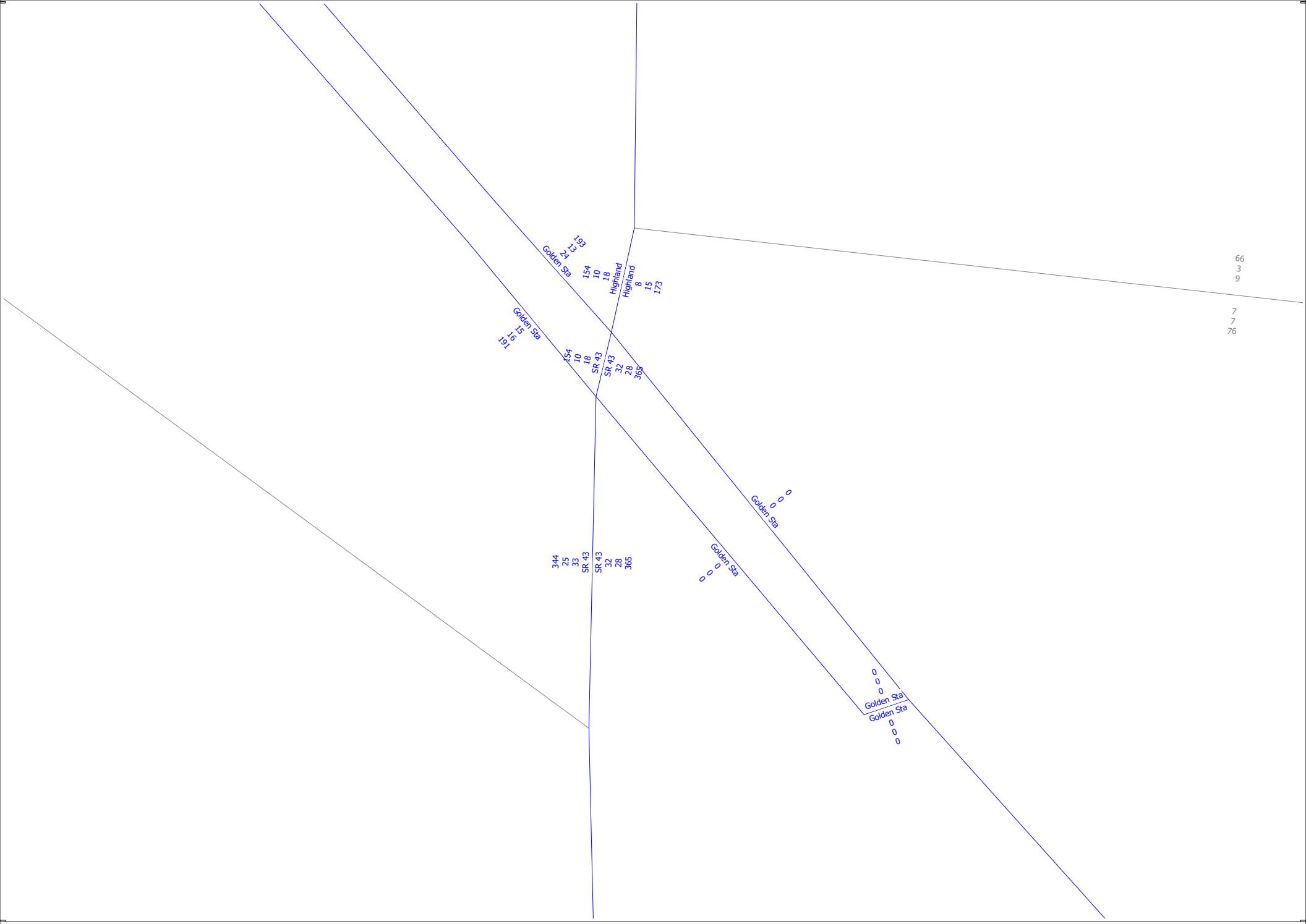
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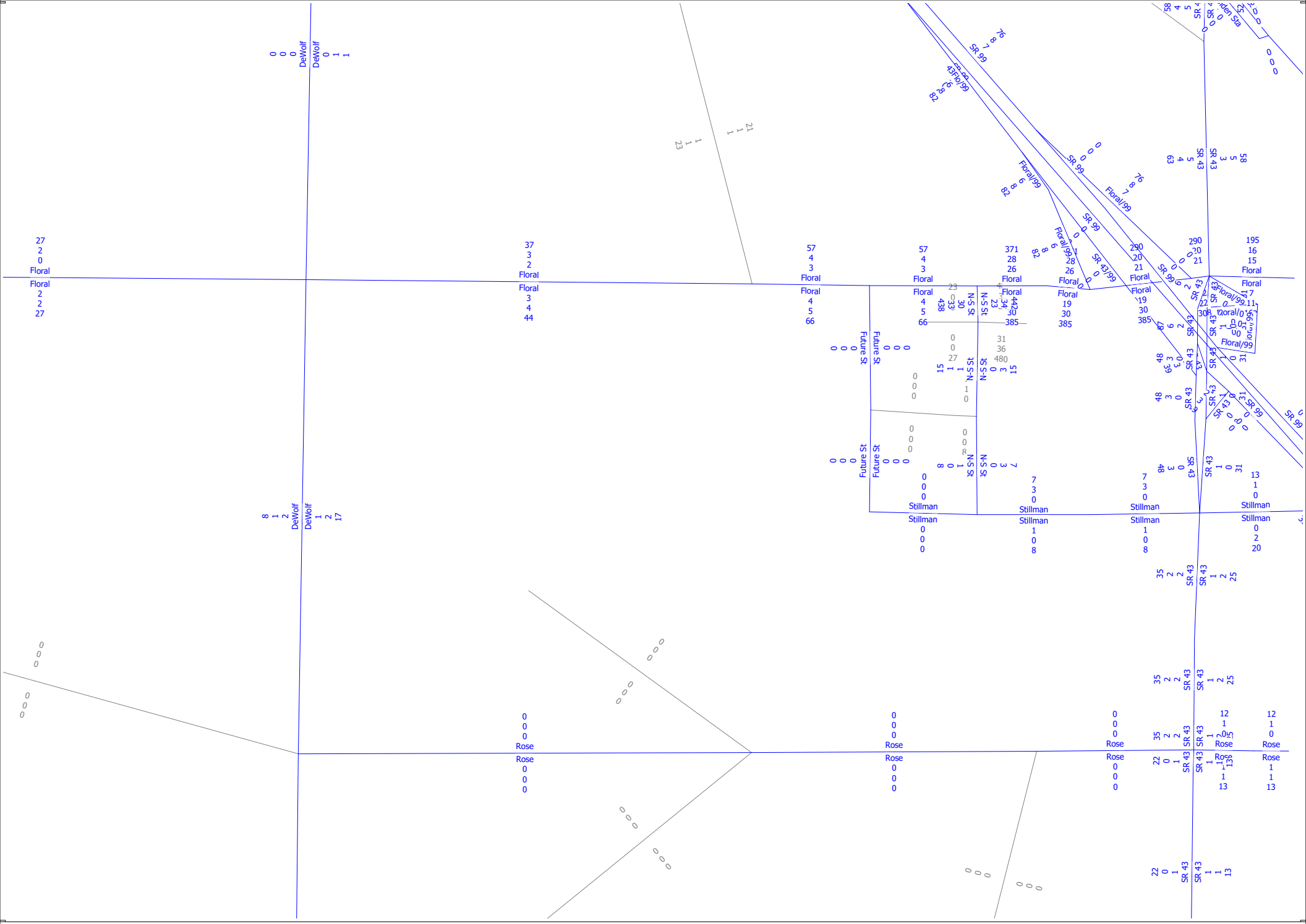
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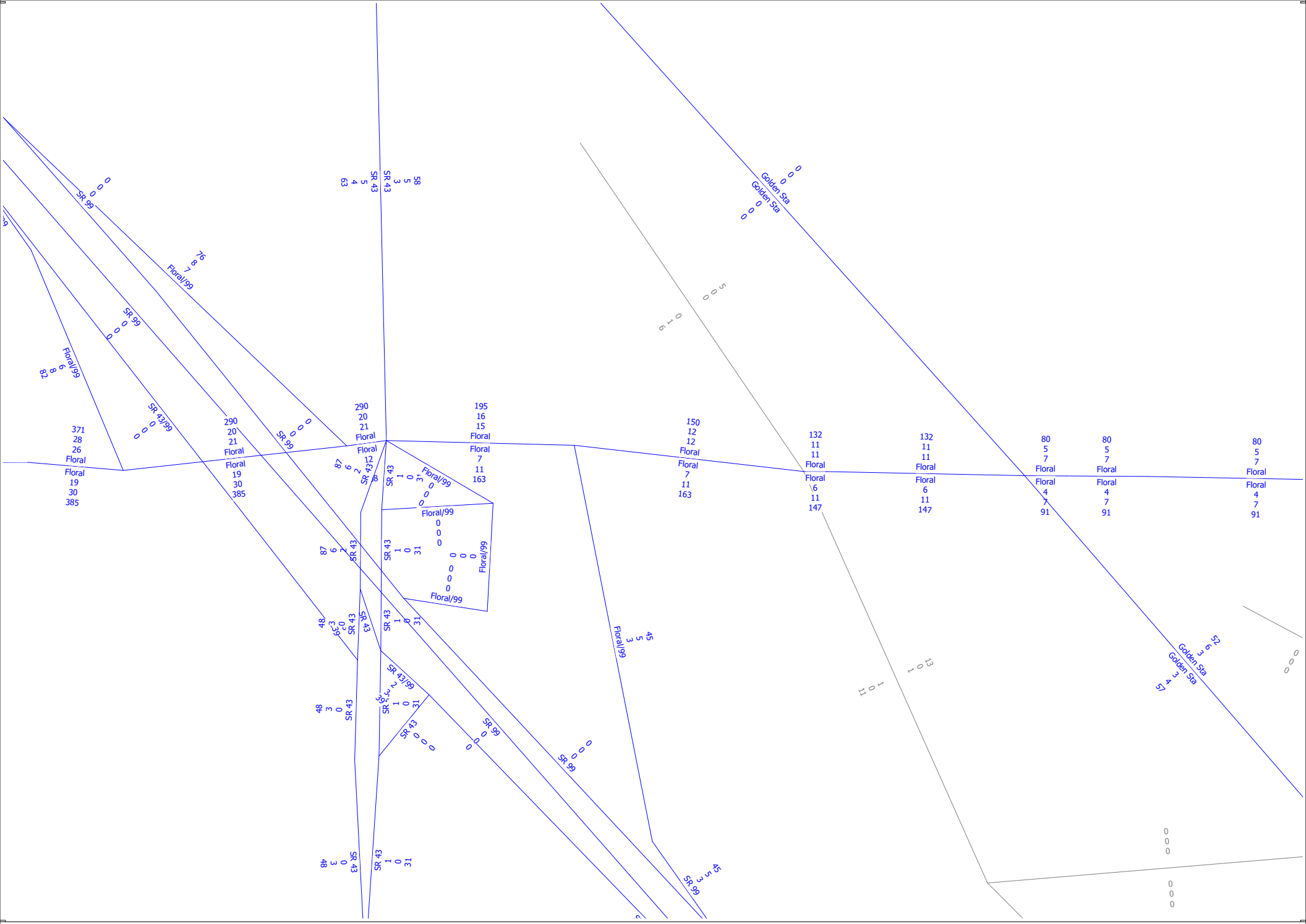
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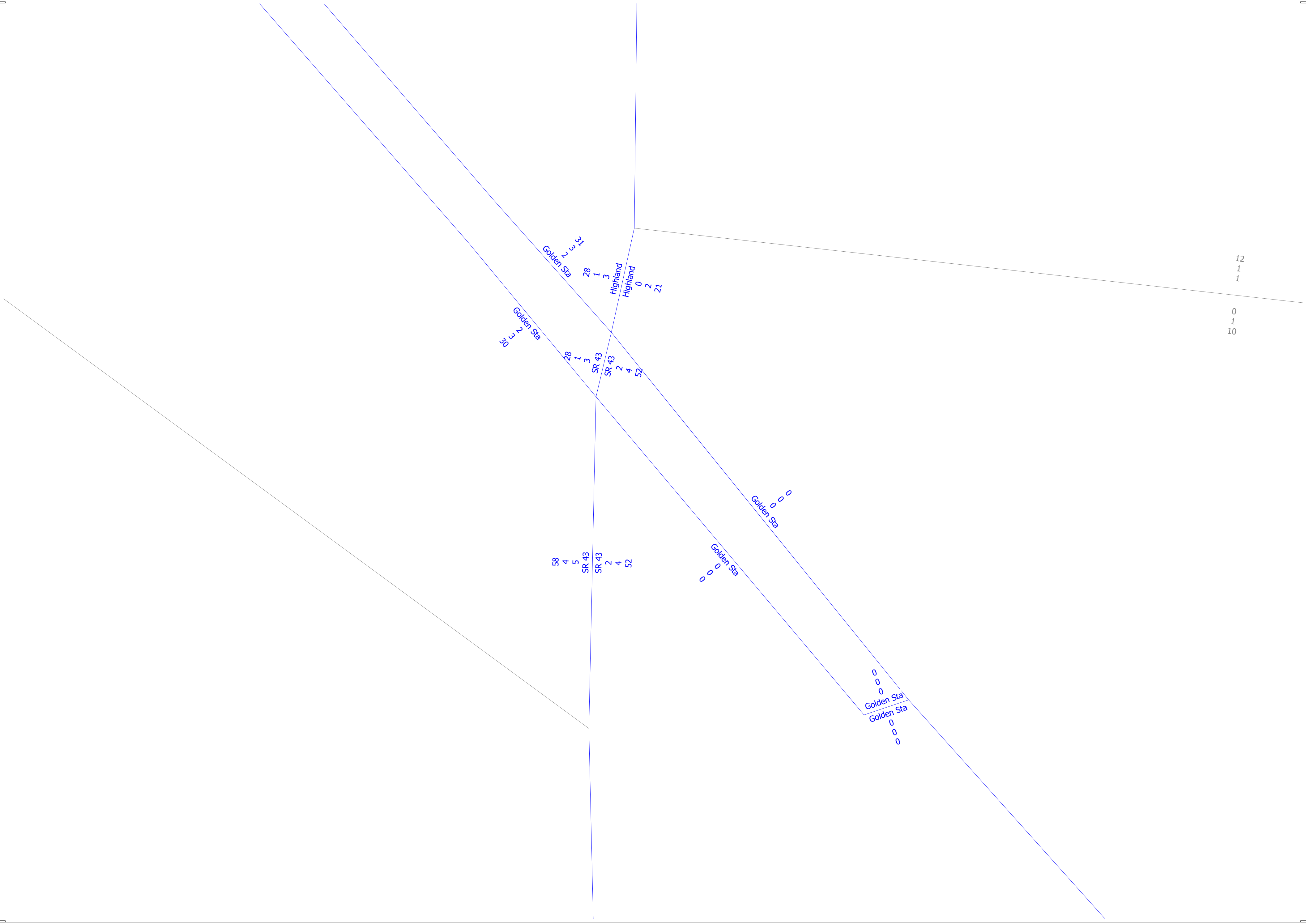
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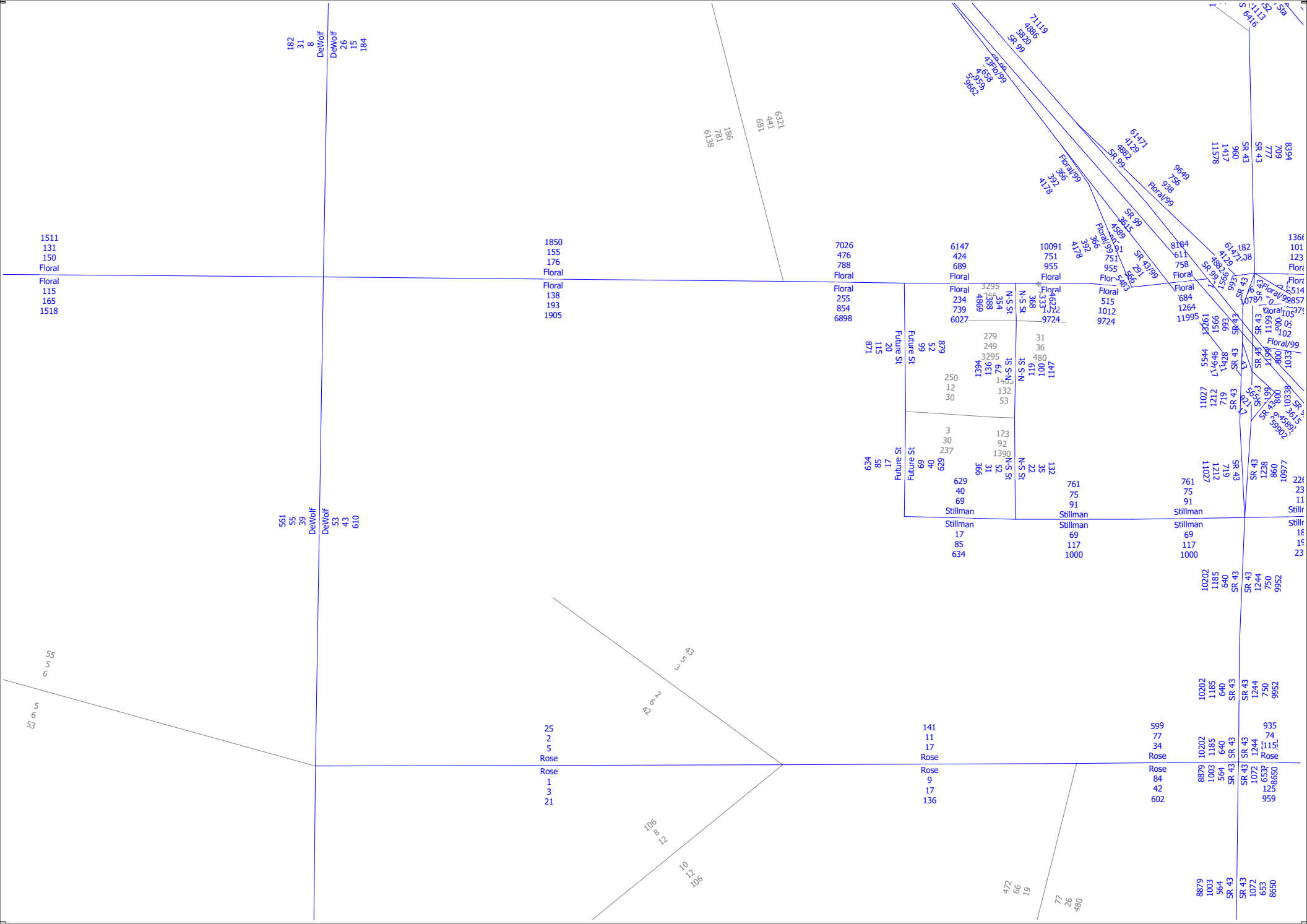


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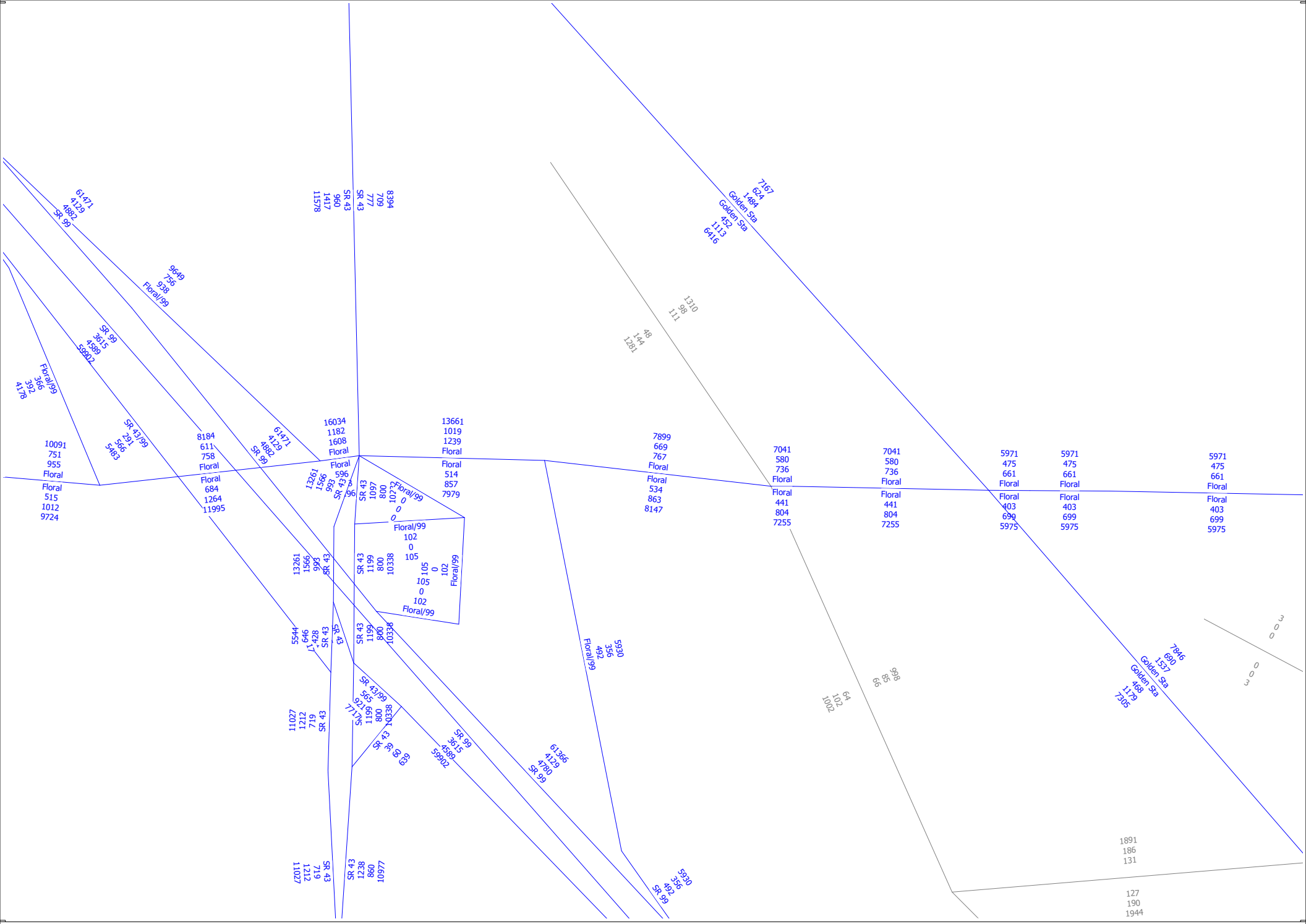
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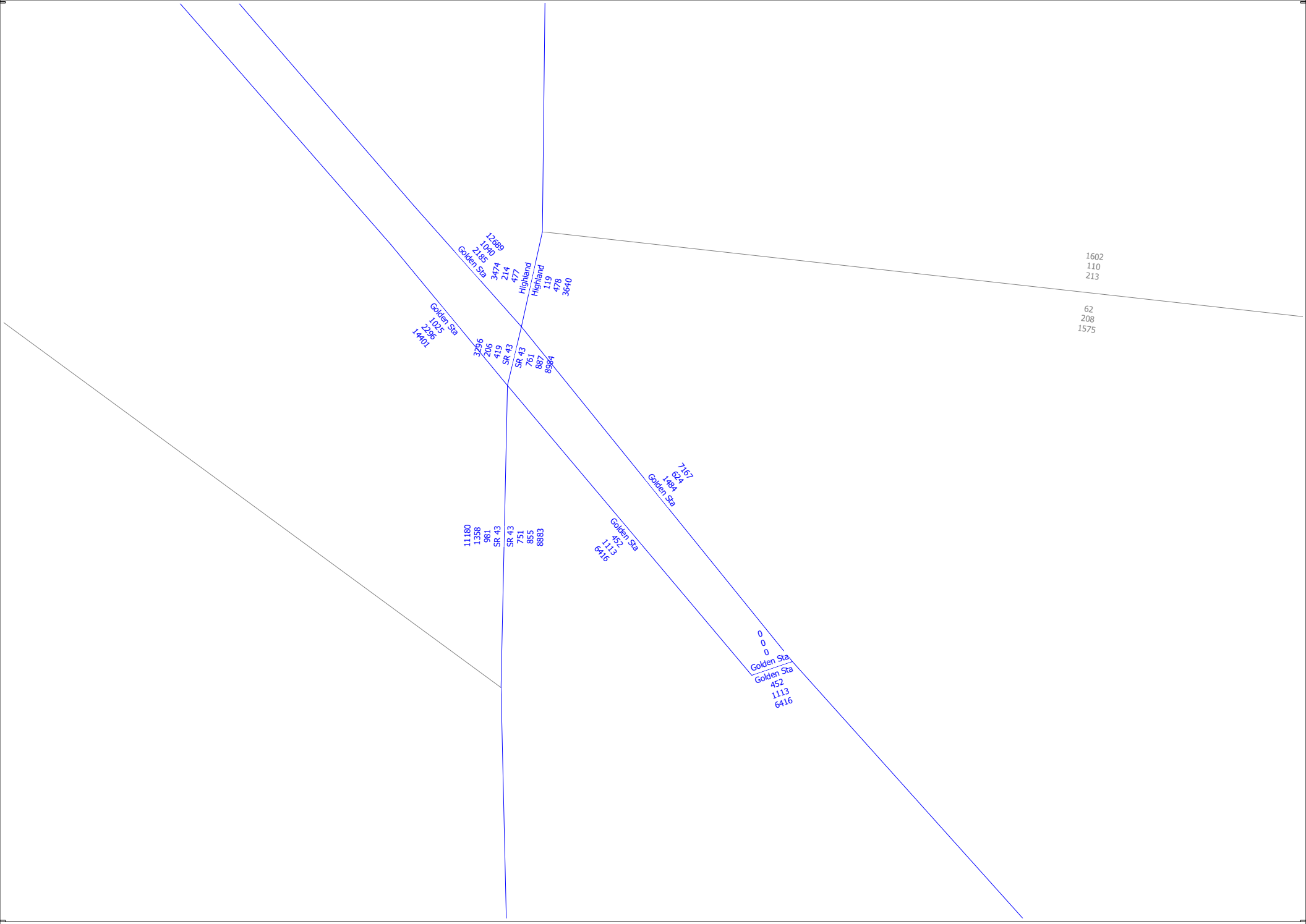
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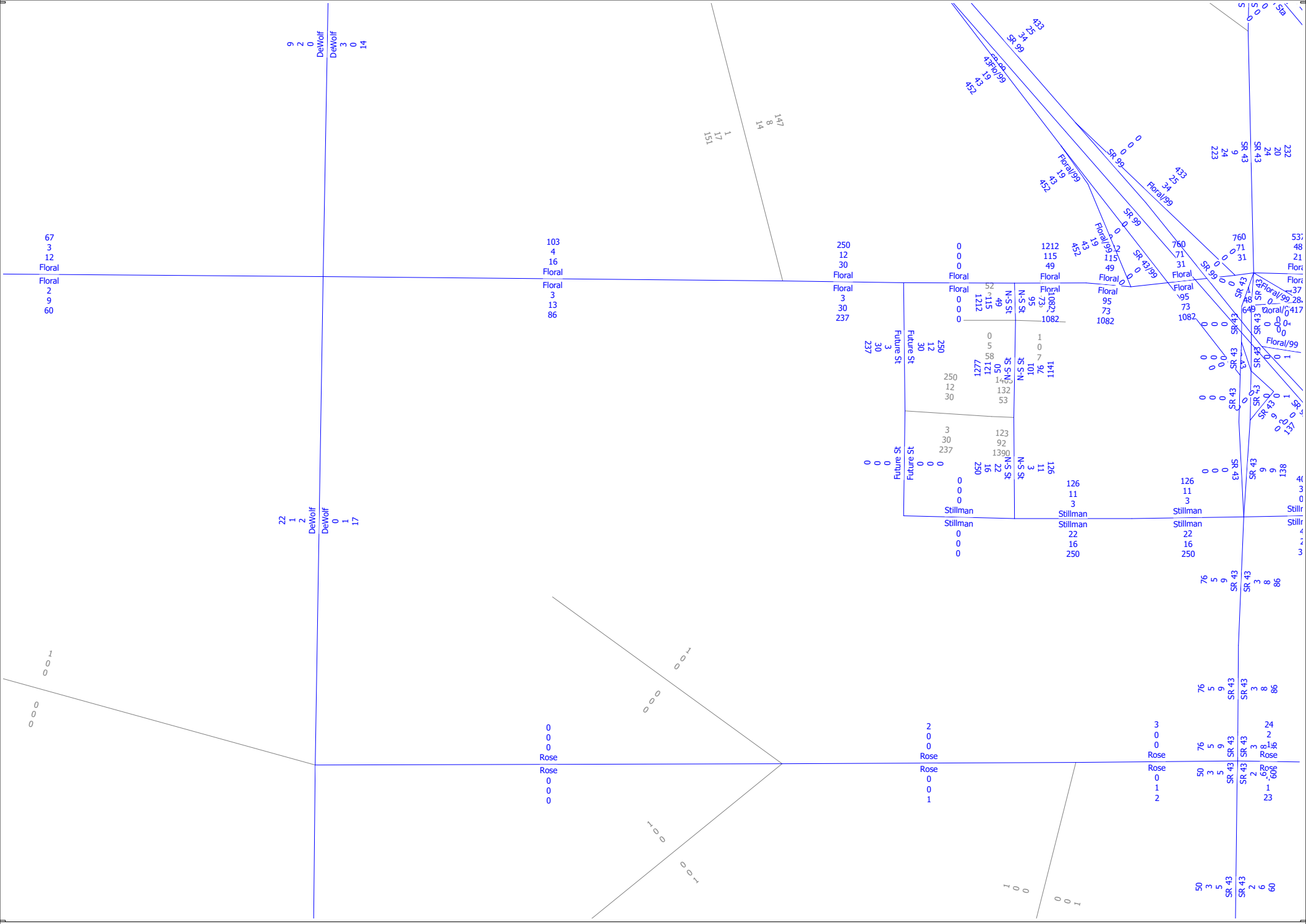
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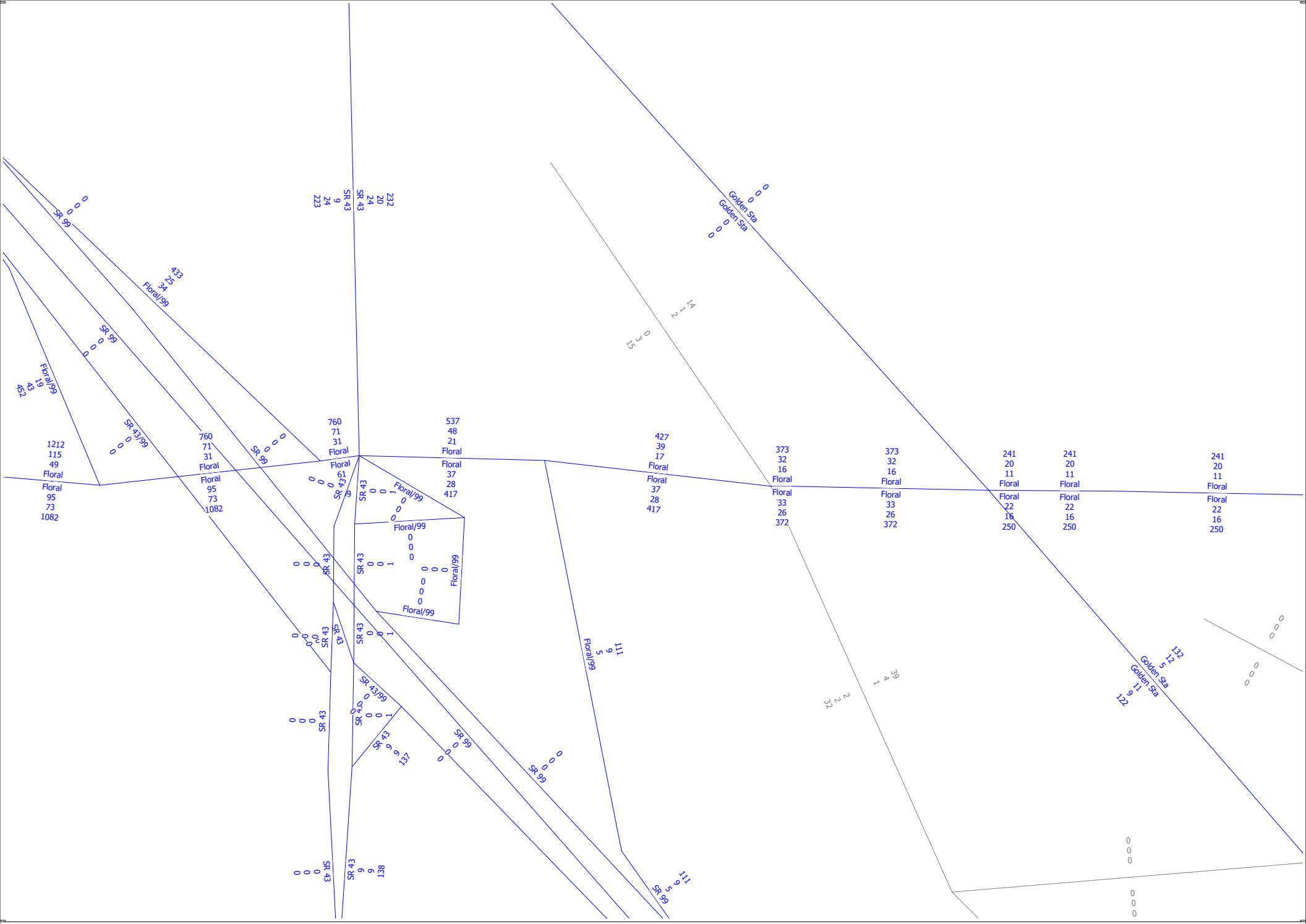
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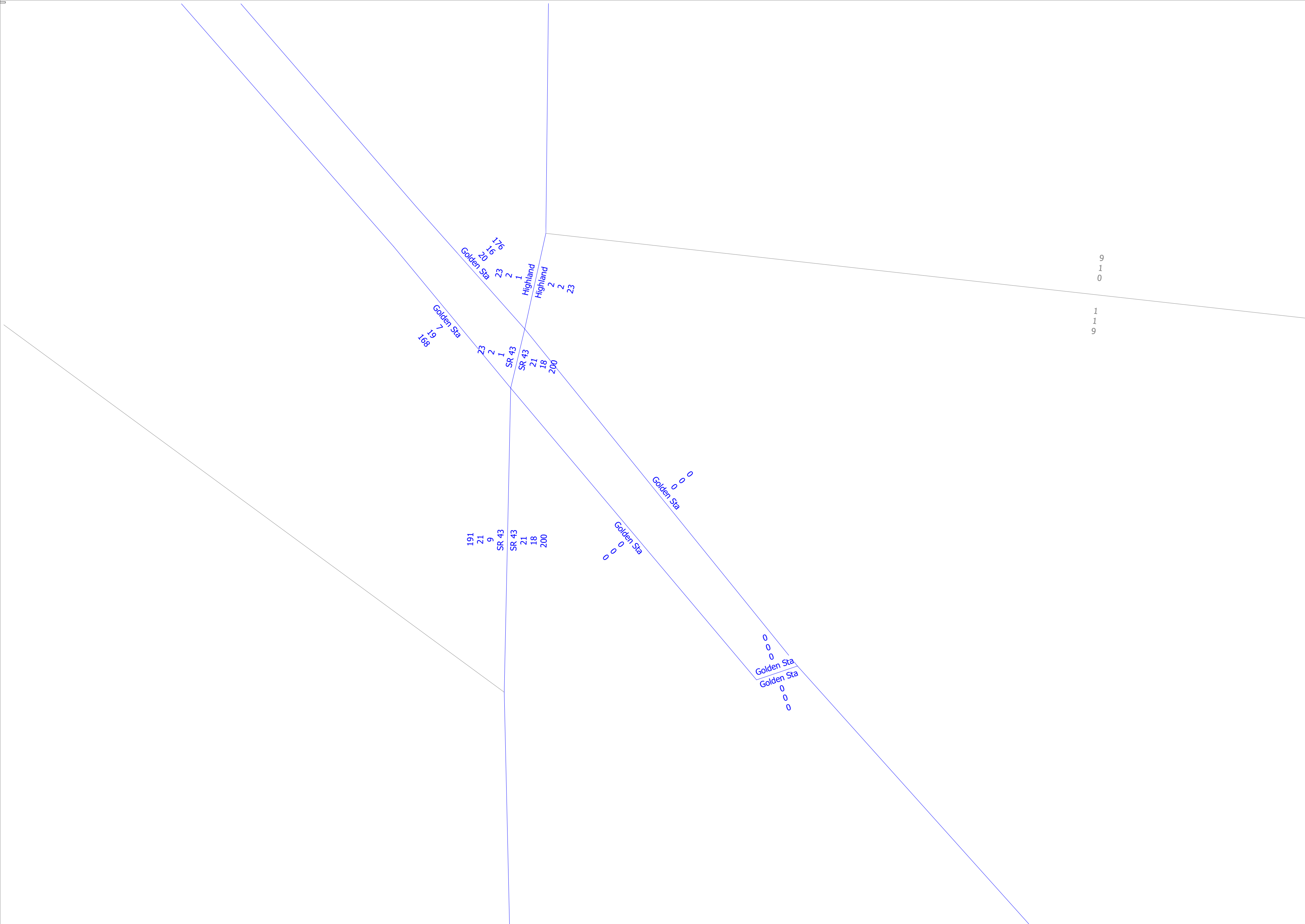
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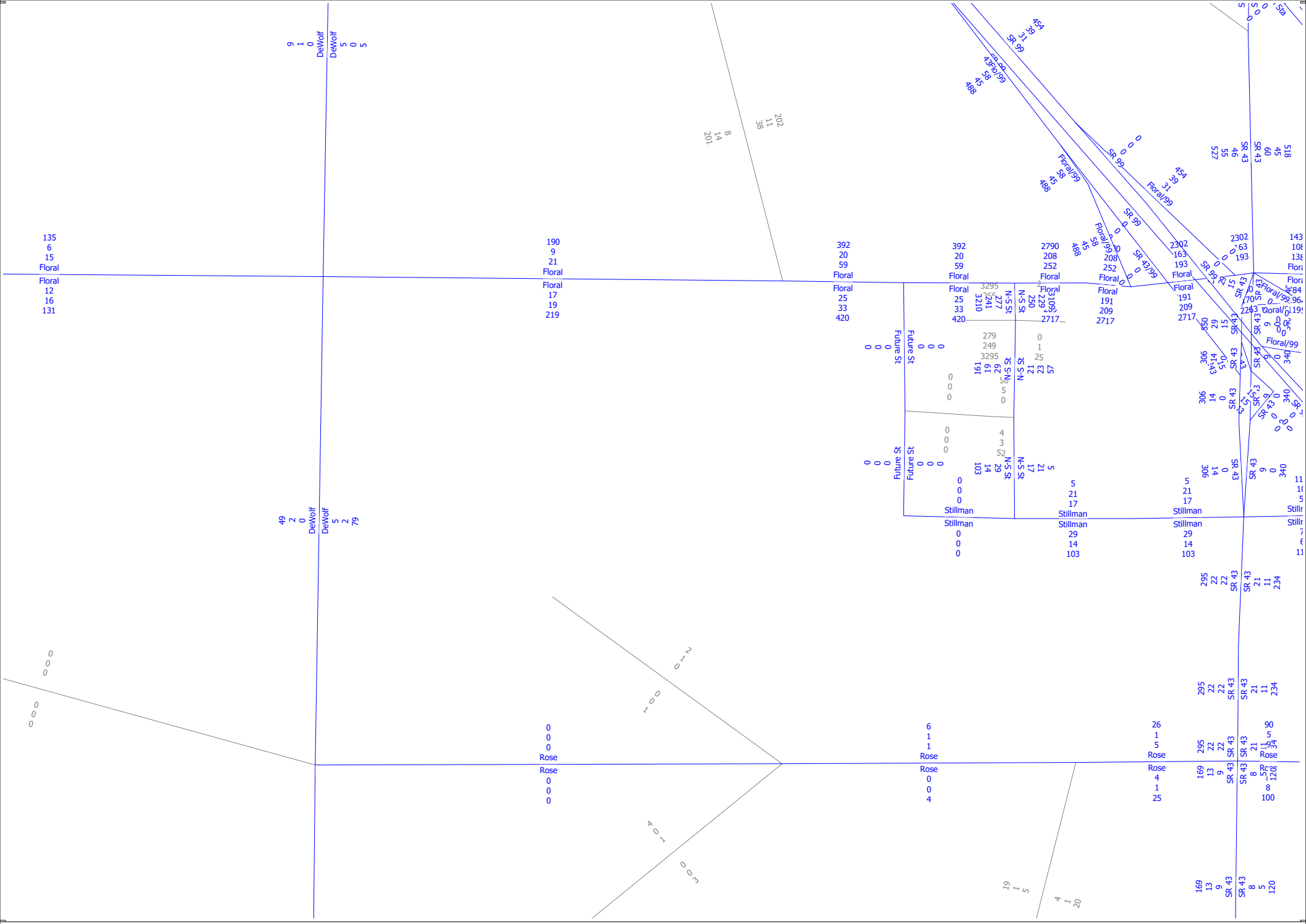
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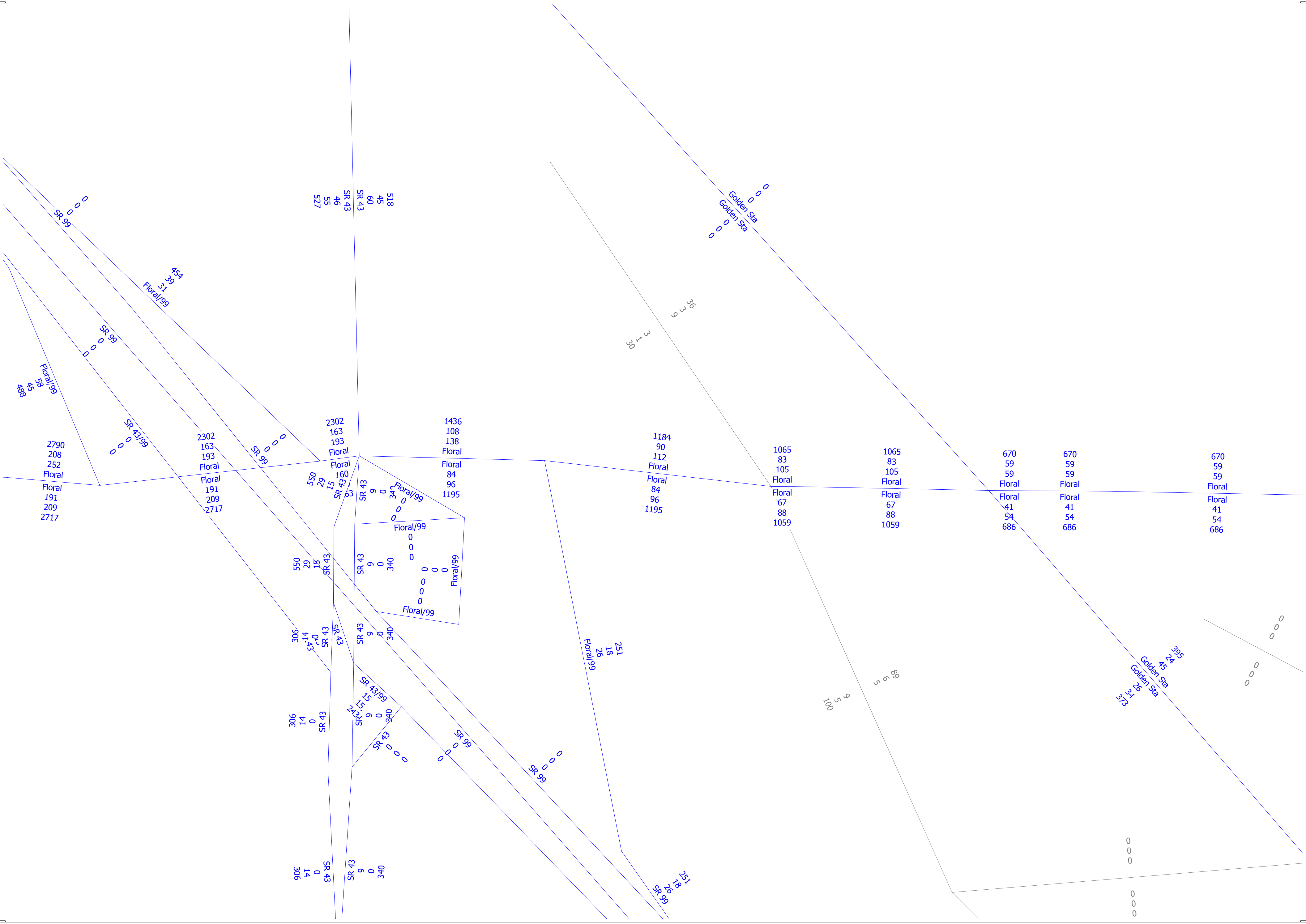
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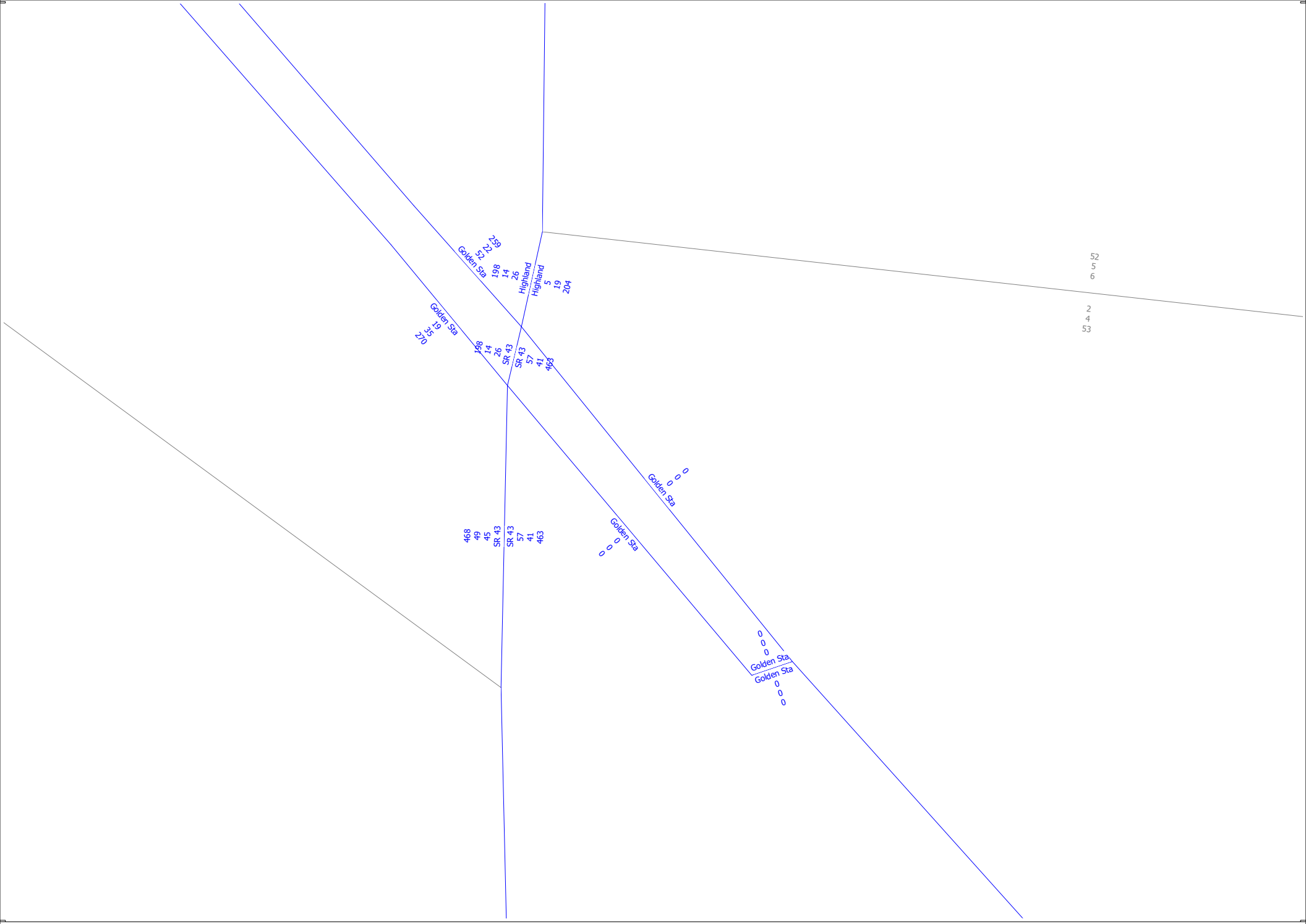
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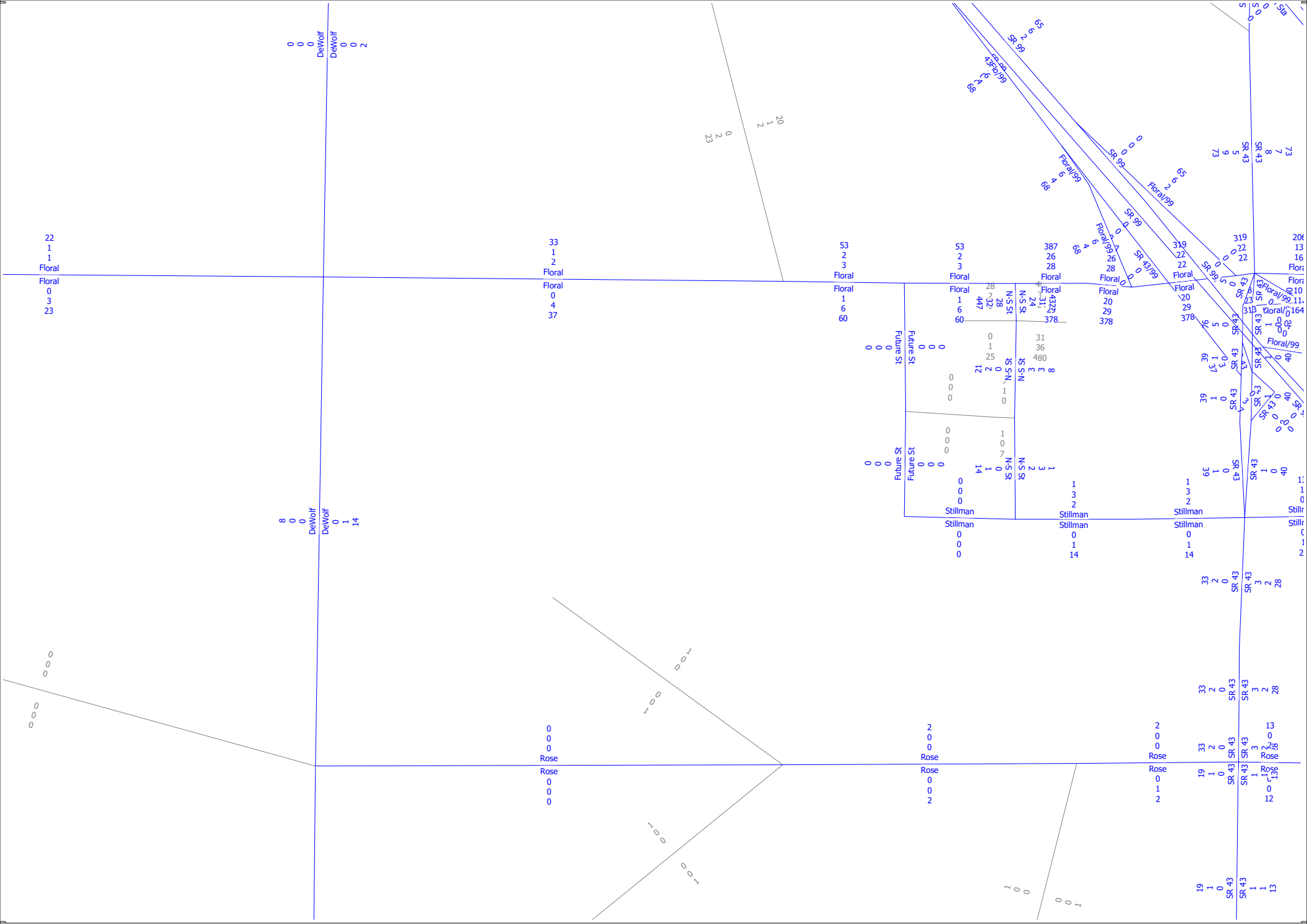
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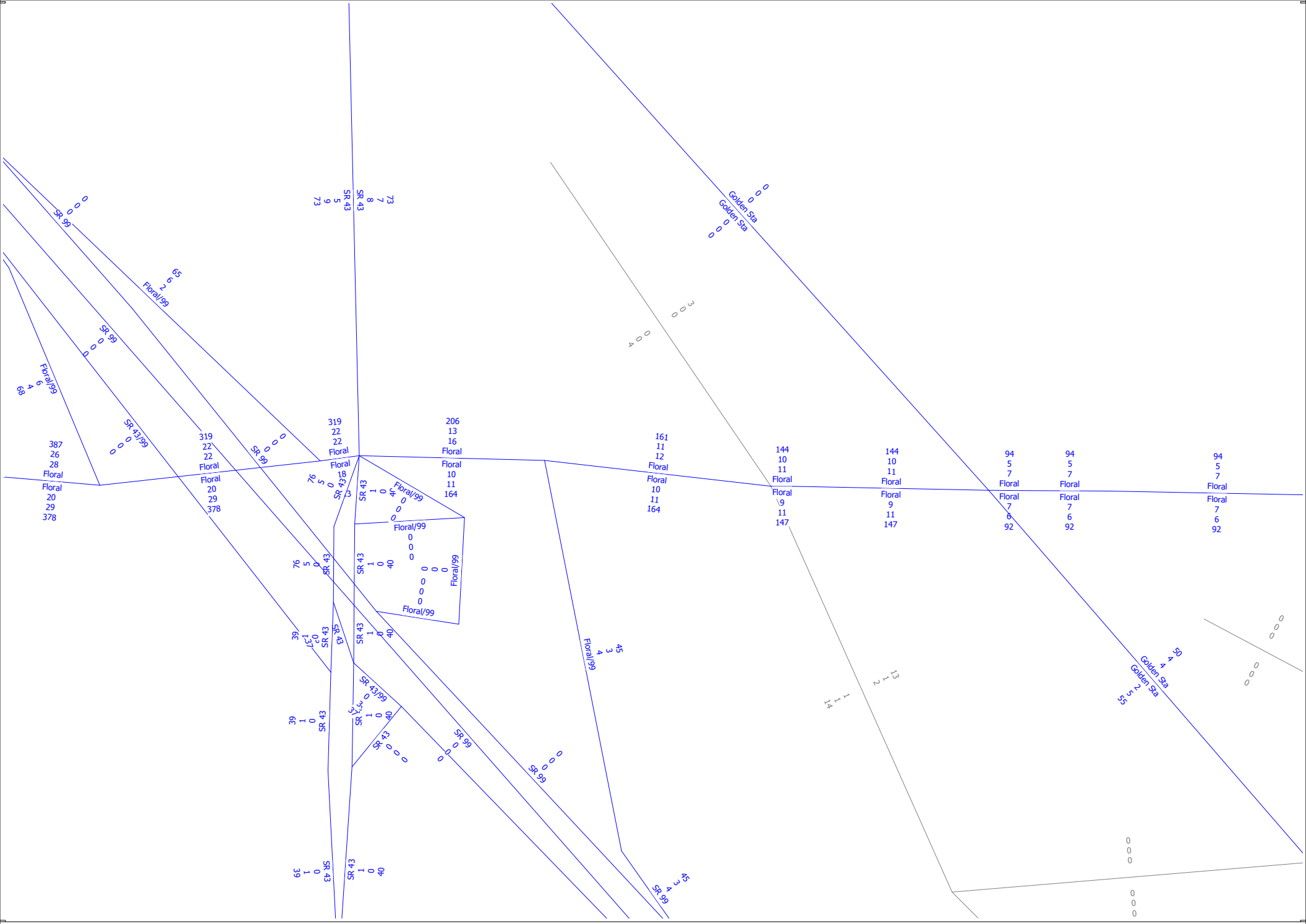
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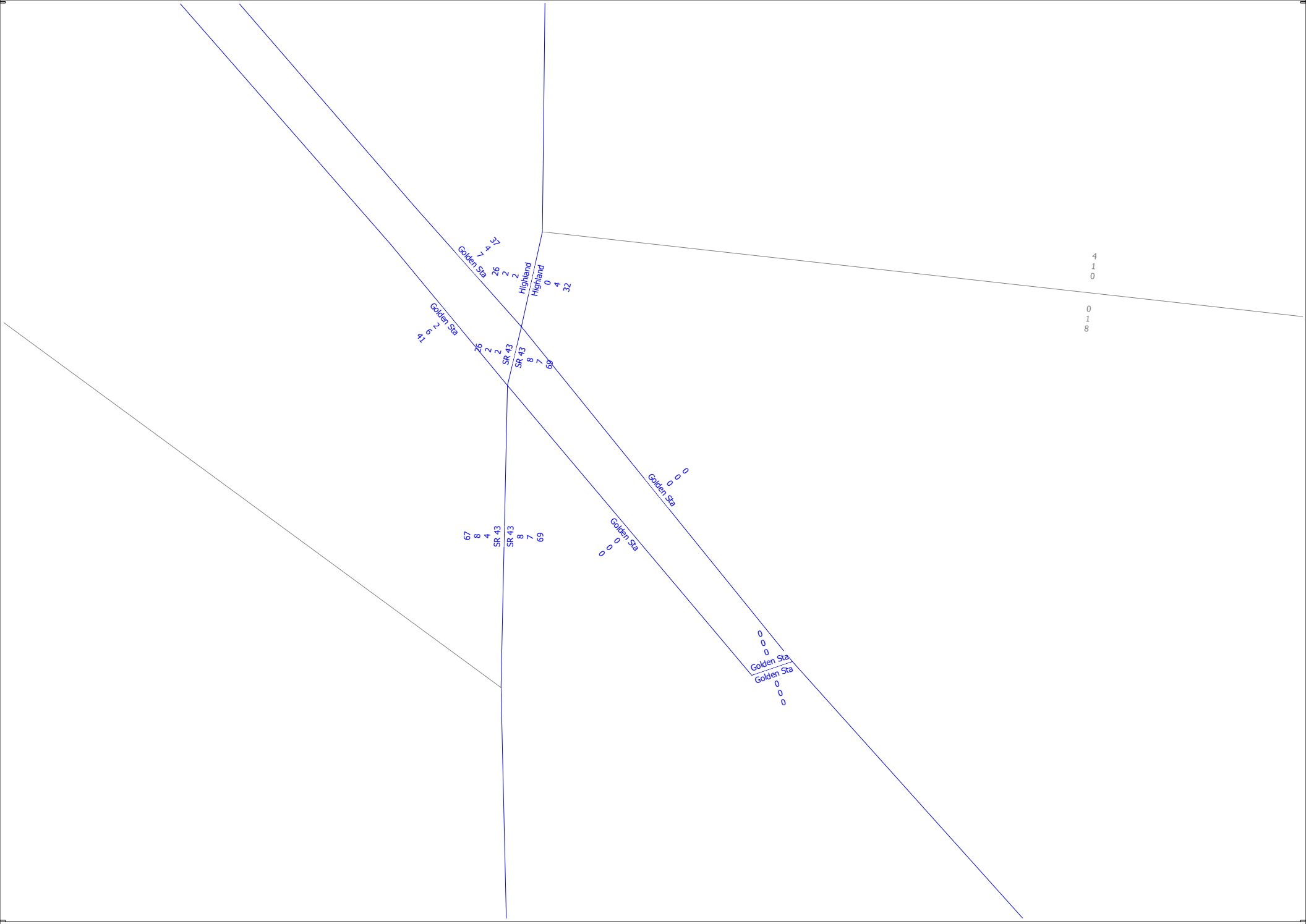
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Appendix D: Methodology

Levels of Service Methodology

The description and procedures for calculating capacity and level of service (LOS) are found in the Transportation Research Board, Highway Capacity Manual (HCM). The HCM 6th Edition represents the research on capacity and quality of service for transportation facilities.

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience.

Six levels of service are defined for each type of facility that has analysis procedures available. Letters designate each level of service (LOS), from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each LOS represents a range of operating conditions and the driver's perception of these conditions. Safety is not included in the measures that establish an LOS.

Intersection Levels of Service

One of the more important elements limiting and often interrupting the flow of traffic on a highway is the intersection. Flow on an interrupted facility is usually dominated by points of fixed operation such as traffic signals, stop signs and yield signs.

Signalized Intersections – Performance Measures

For signalized intersections, the performance measures include automobile volume-to-capacity ratio, automobile delay, queue storage length, ratio of pedestrian delay, pedestrian circulation area, pedestrian perception score, bicycle delay and bicycle perception score. LOS is also considered a performance measure. For the automobile mode, the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection. An LOS designation is given to the weighted average control delay to better describe the level of operation. A description of LOS for signalized intersections is found in Table A-1.

Table A-1: Signalized Intersection Levels of Service Description (Automobile Mode)

Level of Service	*Description*	*Average Control Delay (Seconds per Vehicle)*
A	Operations with a control delay of 10 seconds/vehicle or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is really low and either progression is exceptionally favorable or the cycle length is very short. If it's due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.	≤10
B	Operations with control delay between 10.1 to 20.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10.0 to 20.0
C	Operations with average control delays between 20.1 to 35.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio no greater than 1.0, the progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35
D	Operations with control delay between 35.1 to 55.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35 to 55
E	Operations with control delay between 55.1 to 80.0 seconds/vehicle and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable and the cycle length is long. Individual cycle failures are frequent.	>55 to 80
F	Operations with unacceptable control delay exceeding 80.0 seconds/vehicle and a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor and the cycle length is long. Most cycles fail to clear the queue.	>80

Note: Source: Highway Capacity Manual 6th Edition

Unsignalized Intersections

The HCM 6th Edition procedures use control delay as a measure of effectiveness to determine level of service. Delay is a measure of driver discomfort, frustration, fuel consumption and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, i.e., in the absence of traffic control, geometric delay, any incidents and any other vehicles. Control delay is the increased time of travel for a vehicle approaching and passing through an unsignalized intersection, compared with a free-flow vehicle if it were not required to slow or stop at the intersection.

All-Way Stop Controlled Intersections

All-way stop controlled intersections are a form of traffic controls in which all approaches to an intersection are required to stop. Similar to signalized intersections, at all-way stop controlled intersections the average control delay per vehicle per approach is determined for the peak hour. A weighted average of control delay per vehicle is then determined for the intersection as a whole. In other words, the delay measured for all-way stop controlled intersections is a measure of the average delay for all vehicles passing through the intersection during the peak hour. An LOS designation is given to the weighted average control delay to better describe the level of operation.

Two-Way Stop Controlled Intersections

Two-way stop controlled (TWSC) intersections in which stop signs are used to assign the right-of-way, are the most prevalent type of intersection in the United States. At TWSC intersections the stop-controlled approaches are referred to as the minor street approaches and can be either public streets or private driveways. The approaches that are not controlled by stop signs are referred to as the major street approaches.

The capacity of movements subject to delay are determined using the "critical gap" method of capacity analysis. Expected average control delay based on movement volume and movement capacity is calculated. An LOS for a TWSC intersection is determined by the computed or measured control delay for each minor movement. LOS is not defined for the intersection as a whole for three main reasons: (a) major-street through vehicles are assumed to experience zero delay; (b) the disproportionate number of major-street through vehicles at the typical TWSC intersection skews the weighted average of all movements, resulting in a very low overall average delay from all vehicles; and (c) the resulting low delay can mask important LOS deficiencies for minor movements. Table A-2 provides a description of LOS at unsignalized intersections.

Table A-2: Unsignalized Intersection Levels of Service Description (Automobile Mode)

Control Delay (Seconds per Vehicle)	***LOS by Volume-to-Capacity Ratio***	
	v/c ≤ 1.0	***v/c > 1.0***
≤10	A	F
>10 to 15	B	F
>15 to 25	C	F
>25 to 35	D	F
>35 to 50	E	F
>50	F	F

Note: Source: HCM 6th Edition, Exhibit 20-2.

Roundabout Controlled Intersections

Roundabouts are intersections with a generally circular shape, characterized by yield on entry and circulation around a central island. Roundabouts have been used successfully throughout the world and are being used increasingly in the United States, especially since 1990. The procedure used to calculate LOS incorporates a combination of lane-based regression models and gap acceptance models for both single-lane and multi-lane roundabouts. As a result, the capacity models focus on one entry of a roundabout at a time. Table A-3 provides a description of LOS at roundabout intersections.

Table A-3: Roundabout Intersection Level of Service Description (Automobile Mode)

Control Delay (Seconds per Vehicle)	***LOS by Volume-to-Capacity Ratio***	
	v/c ≤ 1.0	***v/c > 1.0***
≤10	A	F
>10 to 15	B	F
>15 to 25	C	F
>25 to 35	D	F
>35 to 50	E	F
>50	F	F

Note: Source: HCM 6th Edition, Exhibit 22-8.

Segment Levels of Service

Segments are portions of roads without any interruption of flow. These are typically studied as urban streets, basic freeways, multilane highways or two-lane highways. Each of these categories has further classification and the level of service analysis can differ between them.

Basic Freeway and Multilane Highway Segments

For segments of multilane highways and basic freeways outside the influence of merging, diverging and weaving maneuvers, LOS is defined by density. Density describes a motorist's proximity to other vehicles and is related to a motorist's freedom to maneuver within the traffic stream. Chapter 12 of the Highway Capacity Manual categorizes each LOS as follows:

LOS A describes free-flow operations. FFS prevails on the freeway or multilane highway, and vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The effects of incidents or point breakdowns are easily absorbed.

LOS B represents reasonably free-flow operations, and FFS on the freeway or multilane highway is maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. The effects of minor incidents are still easily absorbed.

LOS C provides for flow with speeds near the FFS of the freeway or multilane highway. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver. Minor incidents may still be absorbed, but the local deterioration in service quality will be significant. Queues may be expected to form behind any significant blockages.

LOS D is the level at which speeds begin to decline with increasing flows, with density increasing more quickly. Freedom to maneuver within the traffic stream is seriously limited, and drivers experience reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing, because the traffic stream has little space to absorb disruptions.

LOS E describes operation at or near capacity. Operations on the freeway or multilane highway at this level are highly volatile because there are virtually no usable gaps within the traffic stream, leaving little room to maneuver within the traffic stream. Any disruption to the traffic stream, such as vehicles entering from a ramp or an access point or a vehicle changing lanes, can establish a disruption wave that propagates throughout the upstream traffic stream. Toward the upper boundary of LOS E, the traffic stream has no ability to dissipate even the most minor disruption, and any incident can be expected to produce a serious breakdown and substantial queuing. The physical and psychological comfort afforded to drivers is poor.

LOS F describes unstable flow. Such conditions exist within queues forming behind bottlenecks. Breakdowns occur for a number of reasons:

- Traffic incidents can temporarily reduce the capacity of a short segment so that the number of vehicles arriving at a point is greater than the number of vehicles that can move through it.
- Points of recurring congestion, such as merge or weaving segments and lane drops, experience very high demand in which the number of vehicles arriving is greater than the number of vehicles that can be discharged.
- In analyses using forecast volumes, the projected flow rate can exceed the estimated capacity of a given location.

Basic Freeway

Basic Freeway segments generally have four to eight lanes and posted speed limits between 50 and 75 mi/hr. The performance measures include capacity, free flow speed, demand and volume-to-capacity ratio, space mean speed, average density and LOS. The LOS is dependent on the number of lanes, base free-flow speed, lane width, right side lateral clearance, total ramp density, hourly demand volume, peak hour factor and total truck percentage. Table A-4 provides a description of LOS for Basic Freeway Segments.

Multilane Highway

Multilane Highway segments generally have four to six lanes and posted speed limits between 40 and 55 mi/hr. The performance measures include capacity, free flow speed, demand and volume-to-capacity ratio, space mean speed, average density and LOS. The LOS is dependent on the number of lanes, base free-flow speed, lane width, right side lateral clearance, left side lateral clearance, access point density, terrain type, median type, hourly demand volume, peak hour factor and total truck percentage. Table A-4 provides a description of LOS for Multilane Highway Segments.

Table A-4: Basic Freeway and Multilane Highway Segment Level of Service Description

Level of Service	*Density (Passenger Cars per Mile per Lane)*
A	≤11
B	>11 to 18
C	>18 to 26
D	>26 to 35
E	>35 to 45
F	>45 or Demand Exceeds Capacity

Note: Source: HCM 6th Edition, Exhibit 12-15.

Two-Lane Highway Segments

Two-Lane Highways generally have one lane per direction and only allow passing maneuvers to take place in the opposing lane of traffic. If allowed, passing maneuvers are limited by the availability of gaps in the opposing traffic stream and by the availability of sufficient sight distance for a driver to discern the approach of an opposing vehicle safely. A principal measure of LOS is percent time spent following and follower density. This is the average percent of time that vehicles must travel in platoons behind slower vehicles due to the inability to pass. Chapter 15 of the Highway Capacity Manual categorizes each LOS as follows:

At **LOS A**, motorists experience high operating speeds on Class I highways and little difficulty in passing. Platoons of three or more vehicles are rare. On Class II highways, speed is controlled primarily by roadway conditions, but a small amount of platooning would be expected. On Class III highways, motorists can maintain operating speeds at or near the facility's FFS.

At **LOS B**, passing demand and passing capacity are balanced. On both Class I and Class II highways, the degree of platooning becomes noticeable. Some speed reductions are present on Class I highways. On Class III highways, maintenance of FFS operation becomes difficult, but the speed reduction is still relatively small.

At **LOS C**, most vehicles travel in platoons. Speeds are noticeably curtailed on all three classes of highways.

At **LOS D**, platooning increases significantly. Passing demand is high on both Class I and Class II facilities, but passing capacity approaches zero. A high percentage of vehicles travels in platoons, and PTSF is noticeable. On Class III highways, the fall-off from FFS is significant.

At **LOS E**, demand is approaching capacity. Passing on Class I and II highways is virtually impossible, and PTSF is more than 80%. Speeds are seriously curtailed. On Class III highways, speed is less than two-thirds of the FFS. The lower limit of LOSE represents capacity.

LOS F exists whenever demand flow in one or both directions exceeds the segment's capacity. Operating conditions are unstable and heavy congestion exists on all classes of two-lane highways.

Two-Lane Highway

The performance measures include average travel speed, segment travel time, percent followers, volume to capacity ratio, follower density and LOS. The LOS is dependent on Highway Class (I, II, or III), lane width, shoulder width, access point density, terrain type, free flow speed, passing lane length, demand flow rate, opposing demand flow rate peak hour factor and total truck percentage. Tables A-5 and A-6 provide a description of LOS for Two-Lane Highway Segments.

Table A-5: Two-Lane Highway Segment Level of Service Description

LOS	*Class I Highways*		*Class II Highways*	*Class III Highways*
	ATS (Mile per Hour)	*PTSF (%)*	*PTSF (%)*	*PFFS (%)*
A	>55	≤35	≤40	>91.7
B	>50 to 55	>35 to 50	>40 to 55	>83.3 to 91.7
C	>45 to 50	>50 to 65	>55 to 70	>75.0 to 83.3
D	>40 to 45	>65 to 80	>70 to 85	>66.7 to 75.0
E	≤40	>80	>85	≤66.7
F	Demand exceeds capacity			

Note: ATS = Average Travel Speed
PTSF = Percent Time Spent Following
PFFS = Percent of Free Flow Speed
Source: HCM 6th Edition, Exhibit 15-3.

Table A-6: Two-Lane Highway Segment Level of Service Description

LOS	*Follower Density (Followers per Mile per Lane)*	
	High Speed Highways Posted Speed Limit ≥ 50 miles per hour	*High Speed Highways Posted Speed Limit < 50 miles per hour*
A	≤2.0	≤2.0
B	>2.0 to 4.0	>2.5 to 5.0
C	>4.0 to 8.0	>5.0 to 10.0
D	>8.0 to 12.0	>10.0 to 15.0
E	>12.0	>15.0

Note: Source: NCHRP 'Improved Analysis of Two-Lane Highway Capacity and Operational Performance, Table 3-23.

Urban Streets (Automobile Mode)

The term "urban streets" refers to urban arterials and collectors, including those in downtown areas. Arterial streets are roads that primarily serve longer through trips. However, providing access to abutting commercial and residential land uses is also an important function of arterials. Collector streets provide both land access and traffic circulation within residential, commercial and industrial areas. Their access function is more important than that of arterials and unlike arterials their operation is not always dominated by traffic signals. Downtown streets are signalized facilities that often resemble arterials.

They not only move through traffic but also provide access to local businesses for passenger cars, transit buses and trucks. Pedestrian conflicts and lane obstructions created by stopping or standing taxicabs, buses, trucks and parking vehicles that cause turbulence in the traffic flow are typical of downtown streets.

Flow Characteristics

The speed of vehicles on urban streets is influenced by three main factors, street environment, interaction among vehicles and traffic control.

The street environment includes the geometric characteristics of the facility, the character of roadside activity and adjacent land uses. Thus, the environment reflects the number and width of lanes, type of median, driveway/access point density, spacing between signalized intersections, existence of parking, level of pedestrian and bicyclist activity and speed limit.

The interaction among vehicles is determined by traffic density, the proportion of trucks and buses and turning movements. This interaction affects the operation of vehicles at intersections and, to a lesser extent, between signals.

Traffic controls (including signals and signs) force a portion of all vehicles to slow or stop. The delays and speed changes caused by traffic control devices reduce vehicle speeds; however, such controls are needed to establish right-of-way.

Urban Street Segments LOS

The average travel speed for through vehicles along an urban street is the determinant of the operating level of service (LOS). The travel speed along a segment, section or entire length of an urban street is dependent on the running speed between signalized intersections and the amount of control delay incurred at signalized intersections. Table A-7 provides a description of LOS for Urban Street Segments.

LOS A describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal. Travel speeds exceed 80 percent of the base free flow speed (FFS).

LOS B describes reasonably unimpeded operation. The ability to maneuver within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67 and 80 percent of the base FFS.

LOS C describes stable operations. The ability to maneuver and change lanes in midblock location may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50 and 67 percent of the base FFS.

LOS D indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volumes or inappropriate signal timing at the boundary intersections. The travel speed is between 40 and 50 percent of the base FFS.

LOS E is characterized as an unstable operation and has significant delay. Such operations may be due to some combination of adverse progression, high volume and inappropriate signal timing at the boundary intersections. The travel speed is between 30 and 40 percent of the base FFS.

LOS F is characterized by street flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30 percent or less of the base FFS.

Table A-7: Urban Street Levels of Service (Automobile Mode)

LOS	***Travel Speed Threshold by Base Free-Flow Speed (miles/hour)***							***Volume-to-Capacity Ratio***
	55	**50**	**45**	**40**	**35**	**30**	**25**	
A	>44	>40	>36	>32	>28	>24	>20	≤ 1.0
B	>37	>34	>30	>27	>23	>20	>17	
C	>28	>25	>23	>20	>18	>15	>13	
D	>22	>20	>18	>16	>14	>12	>10	
E	>17	>15	>14	>12	>11	>9	>8	
F	≤17	≤15	≤14	≤12	≤11	≤9	≤8	
F	Any							> 1.0

Note: a = The Critical volume-to-capacity ratio is based on consideration of the through movement-to-capacity ratio at each boundary intersection in the subject direction of travel. The critical volume-to-capacity ratio is the largest ratio of those considered.
Source: Highway Capacity Manual 6th Edition, Exhibit 16-3.

Appendix E: Existing Traffic Conditions

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	102	120	13	41	210	14	5	124	126	2	13	149
Future Volume (vph)	102	120	13	41	210	14	5	124	126	2	13	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538		1795	1538	1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538		1795	1538	1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	112	132	14	45	231	15	5	136	138	2	14	164
RTOR Reduction (vph)	0	0	11	0	0	10	0	0	125	0	0	0
Lane Group Flow (vph)	112	132	3	0	276	5	5	136	13	0	16	164
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	Prot	NA
Protected Phases	2	2		6	6		7	4		3	3	8
Permitted Phases			2			6			4			
Actuated Green, G (s)	9.7	9.7	9.7		14.8	14.8	0.4	4.4	4.4		0.4	4.4
Effective Green, g (s)	9.7	9.7	9.7		14.8	14.8	0.4	4.4	4.4		0.4	4.4
Actuated g/C Ratio	0.21	0.21	0.21		0.31	0.31	0.01	0.09	0.09		0.01	0.09
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	353	371	316		562	482	14	320	143		14	320
v/s Ratio Prot	0.07	c0.07			c0.15		0.00	0.04			c0.01	c0.05
v/s Ratio Perm			0.00			0.00			0.01			
v/c Ratio	0.32	0.36	0.01		0.49	0.01	0.36	0.42	0.09		1.14	0.51
Uniform Delay, d1	15.9	16.1	14.9		13.1	11.2	23.3	20.2	19.6		23.4	20.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.6	0.0		0.7	0.0	14.9	0.9	0.3		291.3	1.4
Delay (s)	16.5	16.7	14.9		13.8	11.2	38.2	21.1	19.8		314.7	21.8
Level of Service	B	B	B		B	B	D	C	B		F	C
Approach Delay (s)		16.5			13.7			20.8				43.3
Approach LOS		B			B			C				D

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	47.2	Sum of lost time (s)	17.9
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	31
Future Volume (vph)	31
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	34
RTOR Reduction (vph)	31
Lane Group Flow (vph)	3
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	4.4
Effective Green, g (s)	4.4
Actuated g/C Ratio	0.09
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	143
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.02
Uniform Delay, d1	19.4
Progression Factor	1.00
Incremental Delay, d2	0.1
Delay (s)	19.5
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	89	2	7	62	6	0	4	7	11	5	0
Future Vol, veh/h	0	89	2	7	62	6	0	4	7	11	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	101	2	8	70	7	0	5	8	13	6	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	103	0	0	195	195	102	199	193	74
Stage 1	-	-	-	-	-	-	102	102	-	90	90	-
Stage 2	-	-	-	-	-	-	93	93	-	109	103	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1515	-	-	1483	-	-	762	699	950	757	700	985
Stage 1	-	-	-	-	-	-	902	809	-	915	818	-
Stage 2	-	-	-	-	-	-	912	816	-	894	808	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1515	-	-	1483	-	-	754	695	950	743	696	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	754	695	-	743	696	-
Stage 1	-	-	-	-	-	-	902	809	-	915	813	-
Stage 2	-	-	-	-	-	-	900	811	-	882	808	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	9.4	10.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	838	1515	-	-	1483	-	-	728
HCM Lane V/C Ratio	0.015	-	-	-	0.005	-	-	0.025
HCM Control Delay (s)	9.4	0	-	-	7.4	0	-	10.1
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

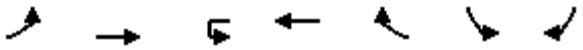
Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	107	82	38	13	2
Future Vol, veh/h	3	107	82	38	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	4	130	100	46	16	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	146	0	-	0	261	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	138	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1430	-	-	-	726	925
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	886	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1430	-	-	-	724	925
Mov Cap-2 Maneuver	-	-	-	-	724	-
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	886	-

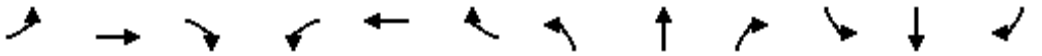
Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1430	-	-	-	746
HCM Lane V/C Ratio	0.003	-	-	-	0.025
HCM Control Delay (s)	7.5	0	-	-	9.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1



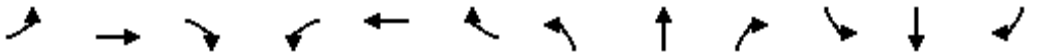
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	12	108	143	114	236	180	6
Future Volume (vph)	12	108	143	114	236	180	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.90		1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1752	3106		1752	1568
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1752	3106		1752	1568
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	15	132	174	139	288	220	7
RTOR Reduction (vph)	0	0	0	156	0	0	6
Lane Group Flow (vph)	15	132	174	271	0	220	1
Confl. Peds. (#/hr)					1		
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	0.6	11.3	7.2	17.9		8.0	8.0
Effective Green, g (s)	0.6	11.3	7.2	17.9		8.0	8.0
Actuated g/C Ratio	0.02	0.29	0.18	0.46		0.20	0.20
Clearance Time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	26	1012	322	1421		358	320
v/s Ratio Prot	0.01	0.04	c0.10	c0.09		c0.13	
v/s Ratio Perm							0.00
v/c Ratio	0.58	0.13	0.54	0.19		0.61	0.00
Uniform Delay, d1	19.1	10.3	14.5	6.3		14.1	12.4
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	27.4	0.1	1.8	0.1		3.1	0.0
Delay (s)	46.5	10.3	16.3	6.4		17.3	12.4
Level of Service	D	B	B	A		B	B
Approach Delay (s)		14.0		9.2		17.1	
Approach LOS		B		A		B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	39.1	Sum of lost time (s)	12.6
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	324	49	53	422	0	0	0	50	164	23	61
Future Volume (vph)	0	324	49	53	422	0	0	0	50	164	23	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1827	1553
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1827	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	348	53	57	454	0	0	0	54	176	25	66
RTOR Reduction (vph)	0	0	38	0	0	0	0	0	41	0	0	45
Lane Group Flow (vph)	0	348	15	57	454	0	0	0	13	176	25	21
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		14.4	14.4	2.9	23.0				12.9	5.8	16.2	16.2
Effective Green, g (s)		14.4	14.4	2.9	23.0				12.9	5.8	16.2	16.2
Actuated g/C Ratio		0.28	0.28	0.06	0.44				0.25	0.11	0.31	0.31
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		966	432	97	1544				394	377	572	486
v/s Ratio Prot		c0.10		0.03	c0.13				0.01	c0.05	c0.01	
v/s Ratio Perm			0.01									0.01
v/c Ratio		0.36	0.03	0.59	0.29				0.03	0.47	0.04	0.04
Uniform Delay, d1		15.0	13.6	23.8	9.2				14.7	21.5	12.4	12.4
Progression Factor		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5	0.1	5.7	0.2				0.0	2.2	0.1	0.1
Delay (s)		15.4	13.7	29.6	9.3				14.7	23.7	12.4	12.4
Level of Service		B	B	C	A				B	C	B	B
Approach Delay (s)		15.2			11.6			14.7			19.9	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	51.7	Sum of lost time (s)	24.3
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	419	96	121	531	79	69	108	61	30	194	170
Future Volume (veh/h)	158	419	96	121	531	79	69	108	61	30	194	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	161	428	98	123	542	81	70	110	62	31	198	173
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	176	1168	521	205	896	133	152	592	263	47	529	415
Arrive On Green	0.10	0.33	0.33	0.06	0.29	0.29	0.04	0.17	0.17	0.03	0.15	0.15
Sat Flow, veh/h	1767	3526	1572	3428	3077	458	3428	3526	1567	1767	3526	2768
Grp Volume(v), veh/h	161	428	98	123	310	313	70	110	62	31	198	173
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1772	1714	1763	1567	1767	1763	1384
Q Serve(g_s), s	5.8	5.9	2.9	2.2	9.7	9.8	1.3	1.7	2.2	1.1	3.2	3.6
Cycle Q Clear(g_c), s	5.8	5.9	2.9	2.2	9.7	9.8	1.3	1.7	2.2	1.1	3.2	3.6
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	1168	521	205	513	516	152	592	263	47	529	415
V/C Ratio(X)	0.91	0.37	0.19	0.60	0.60	0.61	0.46	0.19	0.24	0.66	0.37	0.42
Avail Cap(c_a), veh/h	176	2610	1164	476	1374	1381	214	1951	867	179	2088	1639
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	16.3	15.3	29.4	19.5	19.6	29.9	22.9	23.1	30.9	24.6	24.7
Incr Delay (d2), s/veh	43.0	0.3	0.3	1.1	1.7	1.7	0.8	0.3	0.8	5.8	0.8	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	2.3	1.0	0.9	3.9	4.0	0.5	0.7	0.8	0.5	1.3	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.6	16.6	15.6	30.5	21.2	21.3	30.7	23.2	23.9	36.8	25.3	25.9
LnGrp LOS	E	B	B	C	C	C	C	C	C	D	C	C
Approach Vol, veh/h		687			746			242			402	
Approach Delay, s/veh		29.4			22.8			25.5			26.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	16.9	10.4	28.5	9.5	15.7	13.0	26.0
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 6.5	35.5	* 8.9	* 48	* 4	38.0	* 6.4	* 50
Max Q Clear Time (g_c+I1), s	3.1	4.2	4.2	7.9	3.3	5.6	7.8	11.8
Green Ext Time (p_c), s	0.0	1.4	0.1	5.5	0.0	3.5	0.0	6.6

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	417	0	0	521	172	37
Future Volume (vph)	417	0	0	521	172	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	474	0	0	592	195	42
RTOR Reduction (vph)	0	0	0	0	0	32
Lane Group Flow (vph)	474	0	0	592	195	10
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	16.4			16.4	9.0	9.0
Effective Green, g (s)	16.4			16.4	9.0	9.0
Actuated g/C Ratio	0.44			0.44	0.24	0.24
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	1528			1528	419	375
v/s Ratio Prot	0.14			c0.17	c0.11	
v/s Ratio Perm						0.01
v/c Ratio	0.31			0.39	0.47	0.03
Uniform Delay, d1	6.9			7.2	12.2	10.9
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.2	1.8	0.1
Delay (s)	7.1			7.4	14.0	11.0
Level of Service	A			A	B	B
Approach Delay (s)	7.1			7.4	13.5	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	37.6	Sum of lost time (s)	12.2
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	4	10	264	94	78	390	9	4	67	129	10	4
Future Volume (vph)	4	10	264	94	78	390	9	4	67	129	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	1.00			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3367		1752	3492			1752	3505	1546	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3367		1752	3492			1752	3505	1546	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	11	287	102	85	424	10	4	73	140	11	4
RTOR Reduction (vph)	0	0	38	0	0	2	0	0	0	0	9	0
Lane Group Flow (vph)	0	15	351	0	85	432	0	0	77	140	2	0
Confl. Peds. (#/hr)							4				4	
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		0.4	19.1		7.3	25.6			5.0	8.3	8.3	
Effective Green, g (s)		0.4	19.1		7.3	25.6			5.0	8.3	8.3	
Actuated g/C Ratio		0.01	0.34		0.13	0.45			0.09	0.15	0.15	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		12	1142		227	1587			155	516	227	
v/s Ratio Prot		0.01	c0.10		c0.05	0.12			c0.04	c0.04		
v/s Ratio Perm											0.00	
v/c Ratio		1.25	0.31		0.37	0.27			0.50	0.27	0.01	
Uniform Delay, d1		27.9	13.7		22.4	9.6			24.5	21.3	20.5	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		352.1	0.2		1.0	0.1			2.5	0.3	0.0	
Delay (s)		380.1	13.9		23.5	9.6			26.9	21.6	20.5	
Level of Service		F	B		C	A			C	C	C	
Approach Delay (s)			27.5			11.9				23.4		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	17.2
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



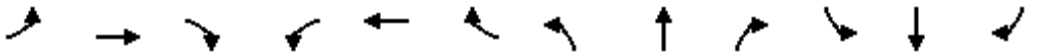
Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	115	104	17
Future Volume (vph)	115	104	17
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1568
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	125	113	18
RTOR Reduction (vph)	0	0	15
Lane Group Flow (vph)	129	113	3
Confl. Peds. (#/hr)			
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	4.8	8.1	8.1
Effective Green, g (s)	4.8	8.1	8.1
Actuated g/C Ratio	0.09	0.14	0.14
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	289	504	225
v/s Ratio Prot	c0.04	0.03	
v/s Ratio Perm			0.00
v/c Ratio	0.45	0.22	0.01
Uniform Delay, d1	24.5	21.3	20.7
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	1.1	0.2	0.0
Delay (s)	25.6	21.5	20.7
Level of Service	C	C	C
Approach Delay (s)		23.5	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	610	26	175	231	0	0	341
Future Volume (vph)	0	0	0	610	26	175	231	0	0	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3282	1468	1641	3282			2584
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3282	1468	1641	3282			2584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	642	27	184	243	0	0	359
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	300
Lane Group Flow (vph)	0	0	0	642	13	184	243	0	0	59
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				17.5	17.5	5.5	13.2			5.8
Effective Green, g (s)				17.5	17.5	5.5	13.2			5.8
Actuated g/C Ratio				0.49	0.49	0.15	0.37			0.16
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1617	723	254	1220			422
v/s Ratio Prot				c0.20		c0.11	0.07			0.02
v/s Ratio Perm					0.01					
v/c Ratio				0.40	0.02	0.72	0.20			0.14
Uniform Delay, d1				5.7	4.6	14.3	7.6			12.7
Progression Factor				1.00	1.00	1.00	1.00			1.00
Incremental Delay, d2				0.5	0.0	8.4	0.2			0.4
Delay (s)				6.2	4.6	22.7	7.7			13.1
Level of Service				A	A	C	A			B
Approach Delay (s)	0.0			6.2			14.2		13.1	
Approach LOS	A			A			B		B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	35.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	7	32	9	3	43	39	584	33	55	457	61
Future Volume (veh/h)	19	7	32	9	3	43	39	584	33	55	457	61
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	19	7	33	9	3	44	40	596	34	56	466	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	61	119	101	16	103	87	111	1155	66	140	1231	966
Arrive On Green	0.02	0.07	0.07	0.01	0.06	0.06	0.03	0.35	0.35	0.04	0.36	0.36
Sat Flow, veh/h	3291	1781	1510	1697	1781	1510	3291	3255	185	3291	3385	2657
Grp Volume(v), veh/h	19	7	33	9	3	44	40	310	320	56	466	62
Grp Sat Flow(s),veh/h/ln	1646	1781	1510	1697	1781	1510	1646	1692	1748	1646	1692	1329
Q Serve(g_s), s	0.3	0.2	1.1	0.3	0.1	1.5	0.6	7.5	7.6	0.9	5.3	0.8
Cycle Q Clear(g_c), s	0.3	0.2	1.1	0.3	0.1	1.5	0.6	7.5	7.6	0.9	5.3	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	61	119	101	16	103	87	111	600	620	140	1231	966
V/C Ratio(X)	0.31	0.06	0.33	0.57	0.03	0.51	0.36	0.52	0.52	0.40	0.38	0.06
Avail Cap(c_a), veh/h	252	1467	1243	130	1467	1243	265	1170	1208	277	2353	1847
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	22.8	23.3	25.8	23.2	23.9	24.7	13.3	13.3	24.3	12.3	10.8
Incr Delay (d2), s/veh	1.1	0.5	4.2	11.2	0.2	6.8	0.7	2.3	2.3	0.7	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.5	0.2	0.0	0.7	0.2	2.6	2.7	0.3	1.6	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	23.3	27.4	37.0	23.4	30.7	25.4	15.6	15.6	25.0	12.9	10.9
LnGrp LOS	C	C	C	D	C	C	C	B	B	C	B	B
Approach Vol, veh/h		59			56			670			584	
Approach Delay, s/veh		26.6			31.3			16.2			13.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	24.9	7.7	10.8	8.4	25.4	8.2	10.3
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 4.4	36.1	* 4	* 43	* 4.2	36.3	* 4	* 43
Max Q Clear Time (g_c+I1), s	2.9	9.6	2.3	3.1	2.6	7.3	2.3	3.5
Green Ext Time (p_c), s	0.0	9.0	0.0	0.3	0.0	7.5	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	4	4	23	1	110	2	529	24	68	382	2
Future Vol, veh/h	2	4	4	23	1	110	2	529	24	68	382	2
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	2	4	4	24	1	117	2	563	26	72	406	2

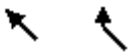
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	839	1145	205	929	1133	296	409	0	0	589	0	0
Stage 1	552	552	-	580	580	-	-	-	-	-	-	-
Stage 2	287	593	-	349	553	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.68	6.68	7.08	4.28	-	-	4.28	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	247	188	780	212	191	680	1098	-	-	936	-	-
Stage 1	468	496	-	450	481	-	-	-	-	-	-	-
Stage 2	677	475	-	621	495	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	191	173	779	194	176	680	1097	-	-	936	-	-
Mov Cap-2 Maneuver	191	173	-	194	176	-	-	-	-	-	-	-
Stage 1	467	457	-	449	480	-	-	-	-	-	-	-
Stage 2	558	474	-	565	456	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.4	16	0	1.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1097	-	-	179	779	469	936	-	-
HCM Lane V/C Ratio	0.002	-	-	0.036	0.005	0.304	0.077	-	-
HCM Control Delay (s)	8.3	-	-	25.9	9.6	16	9.2	-	-
HCM Lane LOS	A	-	-	D	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	1.3	0.3	-	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	119	299	18	49	231	8	1	24	239	199	3	9
Future Volume (vph)	119	299	18	49	231	8	1	24	239	199	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00		1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548		1829	1568		1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00		0.99	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548		1829	1568		1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	128	322	19	53	248	9	1	26	257	214	3	10
RTOR Reduction (vph)	0	0	13	0	0	7	0	0	0	182	0	0
Lane Group Flow (vph)	128	322	6	0	301	2	0	27	257	32	0	13
Confl. Peds. (#/hr)			1	1								
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	2	2		6	6		7	7	4		3	3
Permitted Phases			2			6				4		
Actuated Green, G (s)	16.7	16.7	16.7		13.3	13.3		1.3	8.5	8.5		0.5
Effective Green, g (s)	16.7	16.7	16.7		13.3	13.3		1.3	8.5	8.5		0.5
Actuated g/C Ratio	0.29	0.29	0.29		0.23	0.23		0.02	0.15	0.15		0.01
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	514	541	454		427	366		40	523	234		15
v/s Ratio Prot	0.07	c0.17			c0.16			c0.02	c0.07			0.01
v/s Ratio Perm			0.00			0.00				0.02		
v/c Ratio	0.25	0.60	0.01		0.70	0.01		0.68	0.49	0.14		0.87
Uniform Delay, d1	15.3	17.2	14.3		20.0	16.7		27.6	22.2	21.0		28.2
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	1.8	0.0		5.2	0.0		36.7	0.7	0.3		162.9
Delay (s)	15.6	19.0	14.3		25.2	16.7		64.3	22.9	21.3		191.1
Level of Service	B	B	B		C	B		E	C	C		F
Approach Delay (s)		17.9			25.0				24.5			
Approach LOS		B			C				C			

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	17.9
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	137	66
Future Volume (vph)	137	66
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	147	71
RTOR Reduction (vph)	0	61
Lane Group Flow (vph)	147	10
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	7.7	7.7
Effective Green, g (s)	7.7	7.7
Actuated g/C Ratio	0.14	0.14
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	474	212
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.01
v/c Ratio	0.31	0.05
Uniform Delay, d1	22.2	21.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.4	0.1
Delay (s)	22.6	21.5
Level of Service	C	C
Approach Delay (s)	31.7	
Approach LOS	C	

Intersection Summary

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	124	9	16	175	16	7	5	16	8	4	2
Future Vol, veh/h	0	124	9	16	175	16	7	5	16	8	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	138	10	18	194	18	8	6	18	9	4	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	212	0	0	148	0	0	385	391	143	394	387	203
Stage 1	-	-	-	-	-	-	143	143	-	239	239	-
Stage 2	-	-	-	-	-	-	242	248	-	155	148	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1352	-	-	1427	-	-	572	543	902	564	546	835
Stage 1	-	-	-	-	-	-	857	777	-	762	706	-
Stage 2	-	-	-	-	-	-	759	699	-	845	773	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1352	-	-	1427	-	-	561	535	902	543	538	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	561	535	-	543	538	-
Stage 1	-	-	-	-	-	-	857	777	-	762	696	-
Stage 2	-	-	-	-	-	-	742	689	-	822	773	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.3	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	708	1352	-	-	1427	-	-	570
HCM Lane V/C Ratio	0.044	-	-	-	0.012	-	-	0.027
HCM Control Delay (s)	10.3	0	-	-	7.6	0	-	11.5
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

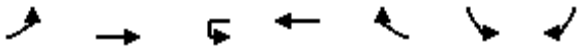
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	178	165	26	42	2
Future Vol, veh/h	3	178	165	26	42	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	202	188	30	48	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	218	0	-	0	411	203
Stage 1	-	-	-	-	203	-
Stage 2	-	-	-	-	208	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1346	-	-	-	595	835
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1346	-	-	-	593	835
Mov Cap-2 Maneuver	-	-	-	-	593	-
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	824	-

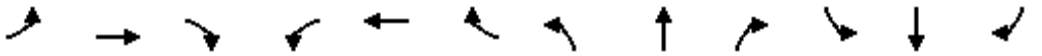
Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1346	-	-	-	601
HCM Lane V/C Ratio	0.003	-	-	-	0.083
HCM Control Delay (s)	7.7	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3



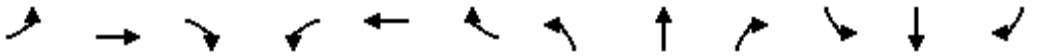
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	198	117	169	397	415	22
Future Volume (vph)	22	198	117	169	397	415	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.89		1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1752	3090		1752	1568
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1752	3090		1752	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	208	123	178	418	437	23
RTOR Reduction (vph)	0	0	0	261	0	0	15
Lane Group Flow (vph)	23	208	123	335	0	437	8
Confl. Peds. (#/hr)					1		
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	0.6	11.8	6.4	17.6		16.0	16.0
Effective Green, g (s)	0.6	11.8	6.4	17.6		16.0	16.0
Actuated g/C Ratio	0.01	0.25	0.14	0.38		0.34	0.34
Clearance Time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	22	883	239	1162		598	536
v/s Ratio Prot	0.01	0.06	c0.07	c0.11		c0.25	
v/s Ratio Perm							0.01
v/c Ratio	1.05	0.24	0.51	0.29		0.73	0.01
Uniform Delay, d1	23.1	13.9	18.8	10.2		13.5	10.2
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	206.7	0.1	1.9	0.1		4.6	0.0
Delay (s)	229.8	14.1	20.6	10.4		18.1	10.2
Level of Service	F	B	C	B		B	B
Approach Delay (s)		35.5		12.1		17.7	
Approach LOS		D		B		B	

Intersection Summary			
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	46.8	Sum of lost time (s)	12.6
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	693	117	109	623	0	0	0	134	233	41	110
Future Volume (vph)	0	693	117	109	623	0	0	0	134	233	41	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1845	1548
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1845	1548
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	762	129	120	685	0	0	0	147	256	45	121
RTOR Reduction (vph)	0	0	93	0	0	0	0	0	104	0	0	79
Lane Group Flow (vph)	0	762	36	120	685	0	0	0	43	256	45	42
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		18.7	18.7	6.4	30.8				18.5	10.4	22.9	22.9
Effective Green, g (s)		18.7	18.7	6.4	30.8				18.5	10.4	22.9	22.9
Actuated g/C Ratio		0.28	0.28	0.10	0.47				0.28	0.16	0.35	0.35
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		990	442	169	1630				446	534	638	535
v/s Ratio Prot		c0.22		c0.07	0.20				c0.03	c0.08	0.02	
v/s Ratio Perm			0.02									0.03
v/c Ratio		0.77	0.08	0.71	0.42				0.10	0.48	0.07	0.08
Uniform Delay, d1		21.8	17.4	29.0	11.8				17.7	25.4	14.5	14.6
Progression Factor		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		4.3	0.2	11.1	0.3				0.0	1.7	0.1	0.2
Delay (s)		26.1	17.6	40.1	12.1				17.7	27.1	14.6	14.7
Level of Service		C	B	D	B				B	C	B	B
Approach Delay (s)		24.8			16.2			17.7			22.2	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	24.3
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	218	673	188	103	573	107	105	220	97	64	243	233
Future Volume (veh/h)	218	673	188	103	573	107	105	220	97	64	243	233
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	232	716	200	110	610	114	112	234	103	68	259	248
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	196	1310	584	181	929	173	181	616	275	87	603	474
Arrive On Green	0.11	0.37	0.37	0.05	0.31	0.31	0.05	0.17	0.17	0.05	0.17	0.17
Sat Flow, veh/h	1767	3526	1572	3428	2965	553	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	232	716	200	110	362	362	112	234	103	68	259	248
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1755	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	8.4	12.1	6.9	2.4	13.4	13.5	2.4	4.4	4.4	2.9	5.0	6.2
Cycle Q Clear(g_c), s	8.4	12.1	6.9	2.4	13.4	13.5	2.4	4.4	4.4	2.9	5.0	6.2
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	196	1310	584	181	552	550	181	616	275	87	603	474
V/C Ratio(X)	1.18	0.55	0.34	0.61	0.66	0.66	0.62	0.38	0.37	0.78	0.43	0.52
Avail Cap(c_a), veh/h	196	2372	1058	385	1188	1184	181	1463	653	248	1771	1390
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.6	18.7	17.1	35.1	22.4	22.5	35.1	27.6	27.6	35.6	28.0	28.5
Incr Delay (d2), s/veh	122.0	0.5	0.5	1.2	2.0	2.0	4.6	0.7	1.5	5.6	0.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	4.7	2.5	1.0	5.6	5.6	1.1	1.8	1.7	1.3	2.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	155.6	19.3	17.6	36.3	24.4	24.4	39.7	28.3	29.0	41.1	28.9	30.1
LnGrp LOS	F	B	B	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		1148			834			449			575	
Approach Delay, s/veh		46.6			26.0			31.3			30.8	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	19.3	10.6	35.4	10.6	19.0	15.0	31.0
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 11	31.4	* 8.5	* 51	* 4	38.0	* 8.4	* 51
Max Q Clear Time (g_c+I1), s	4.9	6.4	4.4	14.1	4.4	8.2	10.4	15.5
Green Ext Time (p_c), s	0.0	2.8	0.1	10.5	0.0	4.8	0.0	7.9

Intersection Summary	
HCM 6th Ctrl Delay	35.6
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	681	0	0	592	157	41
Future Volume (vph)	681	0	0	592	157	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	709	0	0	617	164	43
RTOR Reduction (vph)	0	0	0	0	0	34
Lane Group Flow (vph)	709	0	0	617	164	9
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	21.4			21.4	8.3	8.3
Effective Green, g (s)	21.4			21.4	8.3	8.3
Actuated g/C Ratio	0.54			0.54	0.21	0.21
Clearance Time (s)	4.0			4.0	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	1884			1884	365	326
v/s Ratio Prot	c0.20			0.18	c0.09	
v/s Ratio Perm						0.01
v/c Ratio	0.38			0.33	0.45	0.03
Uniform Delay, d1	5.3			5.2	13.8	12.5
Progression Factor	1.00			1.00	1.00	1.00
Incremental Delay, d2	0.2			0.1	1.9	0.1
Delay (s)	5.5			5.3	15.7	12.6
Level of Service	A			A	B	B
Approach Delay (s)	5.5			5.3	15.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	39.8	Sum of lost time (s)	10.1
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	16	35	512	186	55	370	11	19	92	213	23	2
Future Volume (vph)	16	35	512	186	55	370	11	19	92	213	23	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	1.00			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3365		1752	3488			1752	3505	1568	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3365		1752	3488			1752	3505	1568	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	37	545	198	59	394	12	20	98	227	24	2
RTOR Reduction (vph)	0	0	41	0	0	3	0	0	0	0	19	0
Lane Group Flow (vph)	0	54	702	0	59	403	0	0	118	227	5	0
Confl. Peds. (#/hr)							8					
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		3.1	20.8		3.4	20.7			13.1	13.6	13.6	
Effective Green, g (s)		3.1	20.8		3.4	20.7			13.1	13.6	13.6	
Actuated g/C Ratio		0.05	0.33		0.05	0.33			0.21	0.21	0.21	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		85	1103		93	1138			362	751	336	
v/s Ratio Prot		0.03	c0.21		c0.03	0.12			c0.07	0.06		
v/s Ratio Perm											0.00	
v/c Ratio		0.64	0.64		0.63	0.35			0.33	0.30	0.02	
Uniform Delay, d1		29.6	18.1		29.4	16.3			21.4	20.9	19.6	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		14.5	1.2		13.3	0.2			0.5	0.2	0.0	
Delay (s)		44.1	19.3		42.7	16.5			21.9	21.1	19.6	
Level of Service		D	B		D	B			C	C	B	
Approach Delay (s)			21.0			19.8				21.3		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	63.4	Sum of lost time (s)	17.2
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	223	134	35
Future Volume (vph)	223	134	35
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1548
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1548
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	237	143	37
RTOR Reduction (vph)	0	0	32
Lane Group Flow (vph)	239	143	5
Confl. Peds. (#/hr)			1
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	8.8	9.3	9.3
Effective Green, g (s)	8.8	9.3	9.3
Actuated g/C Ratio	0.14	0.15	0.15
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	471	514	227
v/s Ratio Prot	c0.07	0.04	
v/s Ratio Perm			0.00
v/c Ratio	0.51	0.28	0.02
Uniform Delay, d1	25.3	24.1	23.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.3	0.0
Delay (s)	26.2	24.4	23.2
Level of Service	C	C	C
Approach Delay (s)		25.3	
Approach LOS		C	

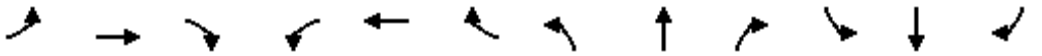
Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	699	50	265	272	0	0	355
Future Volume (vph)	0	0	0	699	50	265	272	0	0	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frpb, ped/bikes				1.00	0.98	1.00	1.00			1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00			1.00
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3471	1521	1736	3471			2733
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3471	1521	1736	3471			2733
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	736	53	279	286	0	0	374
RTOR Reduction (vph)	0	0	0	0	30	0	0	0	0	270
Lane Group Flow (vph)	0	0	0	736	23	279	286	0	0	104
Confl. Peds. (#/hr)					1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				17.4	17.4	10.2	12.4			11.2
Effective Green, g (s)				17.4	17.4	10.2	12.4			11.2
Actuated g/C Ratio				0.43	0.43	0.25	0.31			0.28
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1506	659	441	1073			763
v/s Ratio Prot				c0.21		c0.16	0.08			0.04
v/s Ratio Perm					0.02					
v/c Ratio				0.49	0.03	0.63	0.27			0.14
Uniform Delay, d1				8.2	6.5	13.3	10.4			10.8
Progression Factor				1.00	1.00	1.00	1.00			1.00
Incremental Delay, d2				0.9	0.1	2.2	0.3			0.2
Delay (s)				9.0	6.6	15.5	10.7			11.0
Level of Service				A	A	B	B			B
Approach Delay (s)	0.0			8.8			13.1		11.0	
Approach LOS	A			A			B		B	

Intersection Summary			
HCM 2000 Control Delay	10.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	40.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	9	205	29	6	90	94	499	30	60	527	65
Future Volume (veh/h)	176	9	205	29	6	90	94	499	30	60	527	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	185	9	216	31	6	95	99	525	32	63	555	68
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	215	360	305	47	293	248	178	1035	63	144	1047	822
Arrive On Green	0.06	0.19	0.19	0.03	0.16	0.16	0.05	0.31	0.31	0.04	0.30	0.30
Sat Flow, veh/h	3428	1856	1572	1767	1856	1570	3428	3376	205	3428	3526	2768
Grp Volume(v), veh/h	185	9	216	31	6	95	99	274	283	63	555	68
Grp Sat Flow(s),veh/h/ln	1714	1856	1572	1767	1856	1570	1714	1763	1819	1714	1763	1384
Q Serve(g_s), s	3.4	0.3	8.2	1.1	0.2	3.5	1.8	8.1	8.2	1.1	8.4	1.1
Cycle Q Clear(g_c), s	3.4	0.3	8.2	1.1	0.2	3.5	1.8	8.1	8.2	1.1	8.4	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	215	360	305	47	293	248	178	540	558	144	1047	822
V/C Ratio(X)	0.86	0.02	0.71	0.66	0.02	0.38	0.56	0.51	0.51	0.44	0.53	0.08
Avail Cap(c_a), veh/h	215	1249	1059	111	1249	1057	215	1007	1039	215	2015	1581
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	20.8	24.0	30.8	22.7	24.1	29.6	18.2	18.2	29.9	18.7	16.2
Incr Delay (d2), s/veh	27.1	0.1	6.6	5.8	0.0	1.5	1.0	2.5	2.5	0.8	1.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.1	3.4	0.5	0.1	1.3	0.7	3.2	3.3	0.4	3.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.8	20.9	30.6	36.6	22.8	25.6	30.6	20.7	20.6	30.6	20.0	16.3
LnGrp LOS	E	C	C	D	C	C	C	C	C	C	C	B
Approach Vol, veh/h		410			132			656			686	
Approach Delay, s/veh		42.2			28.0			22.2			20.6	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	26.0	8.9	19.7	9.9	25.4	11.2	17.4
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 4	36.5	* 4	* 43	* 4	36.5	* 4	* 43
Max Q Clear Time (g_c+I1), s	3.1	10.2	3.1	10.2	3.8	10.4	5.4	5.5
Green Ext Time (p_c), s	0.0	7.7	0.0	1.9	0.0	8.6	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	26.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

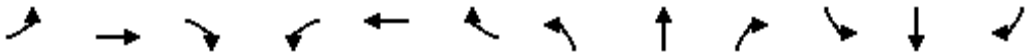
Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	11	6	26	7	102	5	594	33	149	663	9
Future Vol, veh/h	5	11	6	26	7	102	5	594	33	149	663	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	11	6	27	7	104	5	606	34	152	677	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1303	1636	343	1281	1623	320	686	0	0	640	0	0
Stage 1	986	986	-	633	633	-	-	-	-	-	-	-
Stage 2	317	650	-	648	990	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	117	99	650	122	101	673	897	-	-	933	-	-
Stage 1	264	322	-	432	469	-	-	-	-	-	-	-
Stage 2	666	461	-	423	320	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	81	82	650	95	84	673	897	-	-	933	-	-
Mov Cap-2 Maneuver	81	82	-	95	84	-	-	-	-	-	-	-
Stage 1	262	270	-	429	466	-	-	-	-	-	-	-
Stage 2	551	458	-	336	268	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46.2	32.4	0.1	1.7
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	897	-	-	82	650	265	933	-	-
HCM Lane V/C Ratio	0.006	-	-	0.199	0.009	0.52	0.163	-	-
HCM Control Delay (s)	9	-	-	59.5	10.6	32.4	9.6	-	-
HCM Lane LOS	A	-	-	F	B	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	2.8	0.6	-	-



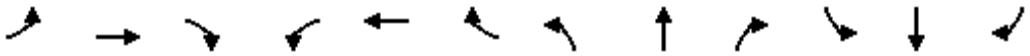
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	4	4	23	1	110	2	529	24	68	382	2
Future Volume (veh/h)	2	4	4	23	1	110	2	529	24	68	382	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	2	4	4	24	1	117	2	563	26	72	406	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	4	79	79	37	1	175	4	1672	77	89	1927	9
Arrive On Green	0.00	0.10	0.10	0.02	0.12	0.12	0.00	0.51	0.51	0.05	0.56	0.56
Sat Flow, veh/h	1682	809	809	1682	13	1483	1682	3267	151	1682	3425	17
Grp Volume(v), veh/h	2	0	8	24	0	118	2	289	300	72	199	209
Grp Sat Flow(s),veh/h/ln	1682	0	1618	1682	0	1495	1682	1678	1739	1682	1678	1764
Q Serve(g_s), s	0.1	0.0	0.3	0.9	0.0	4.7	0.1	6.3	6.4	2.6	3.7	3.7
Cycle Q Clear(g_c), s	0.1	0.0	0.3	0.9	0.0	4.7	0.1	6.3	6.4	2.6	3.7	3.7
Prop In Lane	1.00		0.50	1.00		0.99	1.00		0.09	1.00		0.01
Lane Grp Cap(c), veh/h	4	0	159	37	0	176	4	859	890	89	944	992
V/C Ratio(X)	0.54	0.00	0.05	0.65	0.00	0.67	0.54	0.34	0.34	0.81	0.21	0.21
Avail Cap(c_a), veh/h	108	0	895	108	0	861	108	859	890	126	944	992
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	0.0	25.5	30.3	0.0	26.4	31.2	9.0	9.0	29.3	6.8	6.8
Incr Delay (d2), s/veh	88.3	0.0	0.1	18.0	0.0	4.3	88.3	1.1	1.0	21.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.5	0.0	1.8	0.1	2.0	2.0	1.5	1.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	119.5	0.0	25.7	48.3	0.0	30.8	119.5	10.1	10.0	51.1	7.3	7.3
LnGrp LOS	F	A	C	D	A	C	F	B	B	D	A	A
Approach Vol, veh/h		10			142			591			480	
Approach Delay, s/veh		44.4			33.7			10.4			13.9	
Approach LOS		D			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	37.3	5.6	12.1	4.3	40.5	4.3	13.4
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.7	32.0	* 4	34.6	* 4	32.7	* 4	* 36
Max Q Clear Time (g_c+I1), s	4.6	8.4	2.9	2.3	2.1	5.7	2.1	6.7
Green Ext Time (p_c), s	0.0	3.2	0.0	0.0	0.0	2.2	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	11	6	26	7	102	5	594	33	149	663	9
Future Volume (veh/h)	5	11	6	26	7	102	5	594	33	149	663	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	5	11	6	27	7	104	5	606	34	152	677	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	10	100	54	46	11	162	10	990	55	188	1399	19
Arrive On Green	0.01	0.09	0.09	0.03	0.11	0.11	0.01	0.29	0.29	0.11	0.39	0.39
Sat Flow, veh/h	1767	1129	616	1767	100	1488	1767	3394	190	1767	3562	47
Grp Volume(v), veh/h	5	0	17	27	0	111	5	314	326	152	335	351
Grp Sat Flow(s),veh/h/ln	1767	0	1745	1767	0	1588	1767	1763	1821	1767	1763	1847
Q Serve(g_s), s	0.1	0.0	0.4	0.6	0.0	2.7	0.1	6.2	6.2	3.4	5.8	5.8
Cycle Q Clear(g_c), s	0.1	0.0	0.4	0.6	0.0	2.7	0.1	6.2	6.2	3.4	5.8	5.8
Prop In Lane	1.00		0.35	1.00		0.94	1.00		0.10	1.00		0.03
Lane Grp Cap(c), veh/h	10	0	154	46	0	173	10	514	531	188	692	725
V/C Ratio(X)	0.52	0.00	0.11	0.59	0.00	0.64	0.52	0.61	0.61	0.81	0.48	0.48
Avail Cap(c_a), veh/h	188	0	1494	188	0	1414	188	1400	1447	188	1400	1467
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	17.0	19.5	0.0	17.2	20.0	12.3	12.3	17.7	9.2	9.2
Incr Delay (d2), s/veh	38.0	0.0	0.3	11.5	0.0	3.9	38.0	1.2	1.1	22.4	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.4	0.0	1.0	0.1	1.8	1.9	2.2	1.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.1	0.0	17.3	31.0	0.0	21.2	58.1	13.5	13.5	40.1	9.7	9.7
LnGrp LOS	E	A	B	C	A	C	E	B	B	D	A	A
Approach Vol, veh/h		22			138			645			838	
Approach Delay, s/veh		26.5			23.1			13.8			15.2	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	17.1	5.2	9.6	4.4	21.2	4.4	10.4
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.3	34.6	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	5.4	8.2	2.6	2.4	2.1	7.8	2.1	4.7
Green Ext Time (p_c), s	0.0	3.6	0.0	0.0	0.0	3.9	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	SB	SB	SE	SE	SE	SE	NW	NW	NW
Directions Served	L	T	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	65	93	327	71	4	78	35	32	7	25	40
Average Queue (ft)	30	37	241	14	1	11	5	8	0	4	5
95th Queue (ft)	62	75	233	57	3	41	21	24	2	16	21
Link Distance (ft)		1215	1312			2556	2556			1128	1128
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	140			50	200			70	75		
Storage Blk Time (%)		0	58	0							
Queuing Penalty (veh)		1	8	0							

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	NB	SB
Directions Served	LTR	LTR
Maximum Queue (ft)	29	29
Average Queue (ft)	9	11
95th Queue (ft)	29	32
Link Distance (ft)	2737	2634
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Floral Avenue

Movement	SB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	11
95th Queue (ft)	35
Link Distance (ft)	1334
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	TR	L	R
Maximum Queue (ft)	31	74	69	136	75	101	107	29
Average Queue (ft)	10	19	17	68	19	42	61	4
95th Queue (ft)	32	49	45	110	55	85	92	19
Link Distance (ft)		238	238		675	675		715
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			120			100	
Storage Blk Time (%)				1			0	
Queuing Penalty (veh)				1			0	

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	140	107	26	92	137	138	39	93	126	27	67
Average Queue (ft)	50	47	13	34	61	50	8	29	50	7	20
95th Queue (ft)	101	87	33	68	114	101	23	64	96	26	50
Link Distance (ft)	675	675			513	513	217			1827	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		0									
Queuing Penalty (veh)		0									

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	TR	L	L	T	R
Maximum Queue (ft)	150	315	247	120	87	249	258	252	68	90	235	58
Average Queue (ft)	102	93	89	30	43	38	106	113	28	38	63	23
95th Queue (ft)	168	200	167	91	88	109	181	188	58	82	147	55
Link Distance (ft)		513	513				471	471			578	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100			60	150	150			170	170		80
Storage Blk Time (%)	30	4	21	0			2				1	
Queuing Penalty (veh)	63	6	20	0			2				0	

Intersection: 7: Highland Avenue & Floral Avenue

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	95	180	95	70	73
Average Queue (ft)	27	59	32	36	30
95th Queue (ft)	64	123	80	60	63
Link Distance (ft)		299	299		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			100	100
Storage Blk Time (%)	0	4	0		
Queuing Penalty (veh)	0	1	0		

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	R
Maximum Queue (ft)	96	134	96	75	143	78
Average Queue (ft)	24	39	42	40	68	36
95th Queue (ft)	71	94	86	82	112	79
Link Distance (ft)	471	471	556	556	1193	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						40
Storage Blk Time (%)					15	0
Queuing Penalty (veh)					6	1

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	7	84	133	76	71	65	65	52	88	57	65	64
Average Queue (ft)	1	19	32	25	25	25	18	15	25	7	21	16
95th Queue (ft)	6	56	80	56	59	63	55	36	57	29	50	42
Link Distance (ft)		556	556		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)		0							1			
Queuing Penalty (veh)		0							0			

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	48
Average Queue (ft)	17
95th Queue (ft)	42
Link Distance (ft)	2910
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	161	193	190	119	74	113	117
Average Queue (ft)	69	74	86	43	41	75	34
95th Queue (ft)	143	154	153	94	79	110	86
Link Distance (ft)	762	762		578	578	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65			175	
Storage Blk Time (%)			17	2			
Queuing Penalty (veh)			20	3			

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	22	39	14	38	49	30	55	67	65	238	280	70
Average Queue (ft)	2	8	1	11	8	3	26	25	4	89	91	30
95th Queue (ft)	12	27	6	28	31	18	55	57	29	178	189	61
Link Distance (ft)			291			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	51	120	171	63
Average Queue (ft)	4	61	55	14
95th Queue (ft)	22	116	127	39
Link Distance (ft)		762	762	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	320			320
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	24	30	76	105	28	159	157	117	115	139
Average Queue (ft)	2	5	27	44	2	80	70	51	42	59
95th Queue (ft)	11	21	60	82	13	142	142	100	105	124
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)										
Queuing Penalty (veh)										

Network Summary

Network wide Queuing Penalty: 132

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	SB	SB	SE	SE	SE	SE	NW	NW	NW
Directions Served	L	T	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	90	160	286	71	26	44	55	77	10	23	60
Average Queue (ft)	30	79	110	14	5	27	15	16	0	2	5
95th Queue (ft)	63	134	203	56	18	50	37	53	3	10	28
Link Distance (ft)		1215	1312			2556	2556			1128	1128
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	140			50	200			70	75		
Storage Blk Time (%)		6	37	0			0	0			
Queuing Penalty (veh)		8	3	0			0	0			

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	27	53	28
Average Queue (ft)	3	20	8
95th Queue (ft)	15	41	28
Link Distance (ft)	3190	2737	2634
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Floral Avenue

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	53
Average Queue (ft)	1	30
95th Queue (ft)	10	45
Link Distance (ft)	3190	1334
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	TR	L	R
Maximum Queue (ft)	72	98	94	101	137	166	177	48
Average Queue (ft)	19	39	46	53	63	84	114	11
95th Queue (ft)	51	72	81	94	123	147	169	35
Link Distance (ft)		238	238		675	675		715
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			120			100	
Storage Blk Time (%)		0		0	2		10	
Queuing Penalty (veh)		0		0	2		2	

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	640	667	150	138	179	218	89	144	158	49	88
Average Queue (ft)	191	207	81	69	87	96	31	62	71	14	31
95th Queue (ft)	456	483	175	120	161	170	67	120	125	41	61
Link Distance (ft)	675	675			513	513	217			1827	
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		0									
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		27	0								
Queuing Penalty (veh)		32	0								

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	150	538	570	120	154	142	191	220	113	107	220	122
Average Queue (ft)	136	340	339	75	47	31	123	134	53	50	116	17
95th Queue (ft)	176	602	621	159	99	81	185	203	96	95	188	69
Link Distance (ft)		513	513				471	471			578	578
Upstream Blk Time (%)		17	4									
Queuing Penalty (veh)		88	21									
Storage Bay Dist (ft)	100			60	150	150			170	170		
Storage Blk Time (%)	69	6	35	0	1	0	4				1	1
Queuing Penalty (veh)	231	12	67	1	4	0	4				1	1

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	T	T	R	R
Maximum Queue (ft)	126	116	204	126	94	74
Average Queue (ft)	38	52	100	40	47	33
95th Queue (ft)	96	97	169	95	75	65
Link Distance (ft)			299	299		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	80	100			100	100
Storage Blk Time (%)	1	2	11	1	0	
Queuing Penalty (veh)	1	2	7	2	0	

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	R
Maximum Queue (ft)	173	235	120	112	116	59
Average Queue (ft)	54	75	50	52	51	38
95th Queue (ft)	113	153	102	94	79	75
Link Distance (ft)	471	471	556	556	1193	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						40
Storage Blk Time (%)					10	1
Queuing Penalty (veh)					4	1

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	145	211	294	85	148	98	170	118	127	82	126	61
Average Queue (ft)	32	75	114	31	51	41	62	43	52	31	59	29
95th Queue (ft)	93	174	238	65	111	87	126	90	105	68	107	54
Link Distance (ft)		556	556		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)	0	8		2	1		1	0	8		1	
Queuing Penalty (veh)	0	4		3	1		2	0	2		0	

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	87
Average Queue (ft)	36
95th Queue (ft)	69
Link Distance (ft)	2910
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	2
Queuing Penalty (veh)	1

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	128	112	194	222	77	151	64
Average Queue (ft)	64	56	90	33	42	83	33
95th Queue (ft)	112	104	156	102	73	121	64
Link Distance (ft)	762	762		578	578	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65			175	
Storage Blk Time (%)			20	1			
Queuing Penalty (veh)			27	1			

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	98	119	122	70	70	30	96	145	136	210	257	99
Average Queue (ft)	38	55	7	36	25	4	45	57	27	90	98	43
95th Queue (ft)	85	103	43	61	59	20	75	97	82	170	189	79
Link Distance (ft)			291			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)	0	6										
Queuing Penalty (veh)	1	13										

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	54	180	178	50
Average Queue (ft)	7	89	93	21
95th Queue (ft)	33	156	161	41
Link Distance (ft)		762	762	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	320			320
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	24	31	74	75	31	204	178	180	243	262
Average Queue (ft)	3	7	12	37	3	79	67	81	68	76
95th Queue (ft)	16	26	45	67	16	149	134	148	190	201
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)									0	
Queuing Penalty (veh)									0	

Network Summary

Network wide Queuing Penalty: 550

Appendix F: Existing plus Project Traffic Conditions

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	135	130	13	41	230	14	5	124	143	2	13	149
Future Volume (vph)	135	130	13	41	230	14	5	124	143	2	13	149
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538		1796	1538	1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538		1796	1538	1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	148	143	14	45	253	15	5	136	157	2	14	164
RTOR Reduction (vph)	0	0	11	0	0	11	0	0	138	0	0	0
Lane Group Flow (vph)	148	143	3	0	298	4	5	136	19	0	16	164
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	Prot	NA
Protected Phases	2	2		6	6		7	4		3	3	8
Permitted Phases			2			6			4			
Actuated Green, G (s)	12.5	12.5	12.5		14.3	14.3	0.5	6.2	6.2		0.5	6.2
Effective Green, g (s)	12.5	12.5	12.5		14.3	14.3	0.5	6.2	6.2		0.5	6.2
Actuated g/C Ratio	0.24	0.24	0.24		0.28	0.28	0.01	0.12	0.12		0.01	0.12
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	418	440	374		499	427	16	414	185		16	414
v/s Ratio Prot	c0.09	0.08			c0.17		0.00	0.04			c0.01	c0.05
v/s Ratio Perm			0.00			0.00			0.01			
v/c Ratio	0.35	0.33	0.01		0.60	0.01	0.31	0.33	0.10		1.00	0.40
Uniform Delay, d1	16.1	16.0	14.8		16.1	13.4	25.3	20.7	20.1		25.4	20.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.4	0.0		1.9	0.0	10.9	0.5	0.2		225.0	0.6
Delay (s)	16.6	16.4	14.8		18.0	13.4	36.1	21.2	20.4		250.4	21.5
Level of Service	B	B	B		B	B	D	C	C		F	C
Approach Delay (s)		16.4			17.8			21.0				38.4
Approach LOS		B			B			C				D

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	51.4	Sum of lost time (s)	17.9
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	31
Future Volume (vph)	31
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	34
RTOR Reduction (vph)	30
Lane Group Flow (vph)	4
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	6.2
Effective Green, g (s)	6.2
Actuated g/C Ratio	0.12
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	185
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.02
Uniform Delay, d1	19.9
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	20.0
Level of Service	B
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	107	2	15	91	6	0	4	20	11	5	0
Future Vol, veh/h	0	107	2	15	91	6	0	4	20	11	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	122	2	17	103	7	0	5	23	13	6	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	110	0	0	124	0	0	267	267	123	278	265	107
Stage 1	-	-	-	-	-	-	123	123	-	141	141	-
Stage 2	-	-	-	-	-	-	144	144	-	137	124	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1474	-	-	1457	-	-	684	637	925	672	639	944
Stage 1	-	-	-	-	-	-	879	792	-	860	778	-
Stage 2	-	-	-	-	-	-	856	776	-	864	791	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1474	-	-	1457	-	-	673	629	925	646	631	944
Mov Cap-2 Maneuver	-	-	-	-	-	-	673	629	-	646	631	-
Stage 1	-	-	-	-	-	-	879	792	-	860	769	-
Stage 2	-	-	-	-	-	-	839	767	-	838	791	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1	9.3	10.8
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	858	1474	-	-	1457	-	-	641
HCM Lane V/C Ratio	0.032	-	-	-	0.012	-	-	0.028
HCM Control Delay (s)	9.3	0	-	-	7.5	0	-	10.8
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	3	131	7	0	99	38	20	0	0	13	0	2
Future Vol, veh/h	3	131	7	0	99	38	20	0	0	13	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	160	9	0	121	46	24	0	0	16	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	169	0	0	318	340	165	317	321	144
Stage 1	-	-	-	-	-	-	173	173	-	144	144	-
Stage 2	-	-	-	-	-	-	145	167	-	173	177	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1405	-	-	1402	-	-	633	580	877	634	594	901
Stage 1	-	-	-	-	-	-	827	754	-	856	776	-
Stage 2	-	-	-	-	-	-	855	758	-	827	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1405	-	-	1402	-	-	630	578	877	633	592	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	630	578	-	633	592	-
Stage 1	-	-	-	-	-	-	825	752	-	853	776	-
Stage 2	-	-	-	-	-	-	853	758	-	825	749	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	10.9	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	630	-	1405	-	-	1402	-	-	659
HCM Lane V/C Ratio	0.039	-	0.003	-	-	-	-	-	0.028
HCM Control Delay (s)	10.9	0	7.6	0	-	0	-	-	10.6
HCM Lane LOS	B	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	22	97	25	143	242	105	222	26	44	114	170	19
Future Volume (vph)	22	97	25	143	242	105	222	26	44	114	170	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.90		1.00	0.89		1.00	0.96
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1568		1752	3101		1752	1645		1752	1780
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1568		1752	3101		1752	1645		1752	1780
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	27	118	30	174	295	128	271	32	54	139	207	23
RTOR Reduction (vph)	0	0	26	0	0	154	0	0	98	0	0	5
Lane Group Flow (vph)	27	118	4	0	469	245	0	32	95	0	207	25
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	NA		Prot	NA
Protected Phases	7	4		3	3	8		5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	2.1	9.9	9.9		27.0	34.8		2.2	14.5		12.4	24.7
Effective Green, g (s)	2.1	9.9	9.9		27.0	34.8		2.2	14.5		12.4	24.7
Actuated g/C Ratio	0.03	0.12	0.12		0.33	0.43		0.03	0.18		0.15	0.31
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	45	430	192		586	1338		47	295		269	545
v/s Ratio Prot	0.02	c0.03			c0.27	0.08		0.02	c0.06		c0.12	0.01
v/s Ratio Perm			0.00									
v/c Ratio	0.60	0.27	0.02		0.80	0.18		0.68	0.32		0.77	0.05
Uniform Delay, d1	38.8	32.1	31.1		24.4	14.1		38.9	28.8		32.7	19.7
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	19.7	0.3	0.0		7.7	0.1		33.6	0.6		12.4	0.0
Delay (s)	58.5	32.4	31.1		32.1	14.2		72.5	29.4		45.2	19.7
Level of Service	E	C	C		C	B		E	C		D	B
Approach Delay (s)		36.2				23.8			35.5			42.0
Approach LOS		D				C			D			D

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	16.8
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	6
Future Volume (vph)	6
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.82
Adj. Flow (vph)	7
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

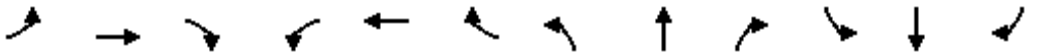
Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	518	3	0	702	0	72
Future Vol, veh/h	518	3	0	702	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	632	4	0	856	0	88

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	318
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	-	-	0	-	0	675
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	675
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

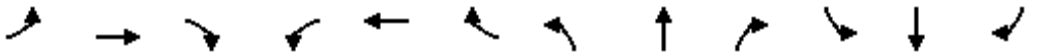
Approach	EB	WB	NB
HCM Control Delay, s	0	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	675	-	-	-
HCM Lane V/C Ratio	0.13	-	-	-
HCM Control Delay (s)	11.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	541	49	53	596	0	0	0	50	164	23	106
Future Volume (vph)	0	541	49	53	596	0	0	0	50	164	23	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1827	1553
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1827	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	582	53	57	641	0	0	0	54	176	25	114
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	47	0	0	92
Lane Group Flow (vph)	0	582	33	57	641	0	0	0	7	176	25	22
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		84.0	84.0	7.9	97.6				18.6	14.8	25.9	25.9
Effective Green, g (s)		84.0	84.0	7.9	97.6				18.6	14.8	25.9	25.9
Actuated g/C Ratio		0.62	0.62	0.06	0.72				0.14	0.11	0.19	0.19
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		2143	959	100	2490				216	366	347	295
v/s Ratio Prot		c0.17		c0.03	0.18				0.00	c0.05	0.01	
v/s Ratio Perm			0.02									c0.01
v/c Ratio		0.27	0.03	0.57	0.26				0.03	0.48	0.07	0.07
Uniform Delay, d1		11.9	10.2	62.4	6.6				50.9	57.0	45.2	45.2
Progression Factor		1.00	1.00	1.22	0.38				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.3	0.1	4.1	0.2				0.0	2.4	0.2	0.3
Delay (s)		12.3	10.2	80.2	2.8				50.9	59.4	45.4	45.5
Level of Service		B	B	F	A				D	E	D	D
Approach Delay (s)		12.1			9.1			50.9			53.3	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	136.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	198	590	102	142	691	79	47	118	76	30	197	206
Future Volume (veh/h)	198	590	102	142	691	79	47	118	76	30	197	206
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	202	602	104	145	705	81	48	120	78	31	201	210
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	222	2129	950	192	1702	195	84	431	191	39	423	332
Arrive On Green	0.25	1.00	1.00	0.11	1.00	1.00	0.02	0.12	0.12	0.02	0.12	0.12
Sat Flow, veh/h	1767	3526	1572	3428	3186	366	3428	3526	1565	1767	3526	2768
Grp Volume(v), veh/h	202	602	104	145	390	396	48	120	78	31	201	210
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1789	1714	1763	1565	1767	1763	1384
Q Serve(g_s), s	15.1	0.0	0.0	5.6	0.0	0.0	1.9	4.2	6.3	2.4	7.2	9.8
Cycle Q Clear(g_c), s	15.1	0.0	0.0	5.6	0.0	0.0	1.9	4.2	6.3	2.4	7.2	9.8
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	222	2129	950	192	942	956	84	431	191	39	423	332
V/C Ratio(X)	0.91	0.28	0.11	0.76	0.41	0.41	0.57	0.28	0.41	0.79	0.48	0.63
Avail Cap(c_a), veh/h	226	2129	950	265	942	956	101	915	406	87	985	773
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.92	0.92	0.92	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	0.0	0.0	59.5	0.0	0.0	65.6	54.2	55.1	66.2	55.9	57.0
Incr Delay (d2), s/veh	34.2	0.3	0.2	4.3	1.2	1.2	2.1	0.6	2.3	12.2	1.4	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	0.1	0.1	2.4	0.3	0.3	0.8	1.9	2.6	1.2	3.3	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.4	0.3	0.2	63.8	1.2	1.2	67.7	54.8	57.4	78.4	57.3	60.4
LnGrp LOS	F	A	A	E	A	A	E	D	E	E	E	E
Approach Vol, veh/h		908			931			246			442	
Approach Delay, s/veh		19.0			11.0			58.1			60.2	
Approach LOS		B			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	22.7	14.2	89.4	9.9	22.4	23.7	80.0
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 6.7	35.3	* 11	* 57	* 4	38.0	* 17	* 50
Max Q Clear Time (g_c+I1), s	4.4	8.3	7.6	2.0	3.9	11.8	17.1	2.0
Green Ext Time (p_c), s	0.0	1.5	0.1	8.4	0.0	3.6	0.0	9.3

Intersection Summary	
HCM 6th Ctrl Delay	27.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	537	0	0	679	195	37
Future Volume (vph)	537	0	0	679	195	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	610	0	0	772	222	42
RTOR Reduction (vph)	0	0	0	0	0	30
Lane Group Flow (vph)	610	0	0	772	222	12
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	40.1			40.1	15.7	15.7
Effective Green, g (s)	40.1			40.1	15.7	15.7
Actuated g/C Ratio	0.59			0.59	0.23	0.23
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2066			2066	404	362
v/s Ratio Prot	0.17			c0.22	c0.13	
v/s Ratio Perm						0.01
v/c Ratio	0.30			0.37	0.55	0.03
Uniform Delay, d1	6.9			7.3	23.0	20.3
Progression Factor	0.83			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.5	2.8	0.1
Delay (s)	6.1			7.9	25.8	20.3
Level of Service	A			A	C	C
Approach Delay (s)	6.1			7.9	24.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	4	10	331	136	78	488	9	4	67	129	10	4
Future Volume (vph)	4	10	331	136	78	488	9	4	67	129	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	1.00			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3352		1752	3494			1752	3505	1546	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3352		1752	3494			1752	3505	1546	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	11	360	148	85	530	10	4	73	140	11	4
RTOR Reduction (vph)	0	0	49	0	0	1	0	0	0	0	9	0
Lane Group Flow (vph)	0	15	459	0	85	539	0	0	77	140	2	0
Confl. Peds. (#/hr)							4				4	
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		0.4	19.9		6.6	25.7			7.5	8.7	8.7	
Effective Green, g (s)		0.4	19.9		6.6	25.7			7.5	8.7	8.7	
Actuated g/C Ratio		0.01	0.34		0.11	0.43			0.13	0.15	0.15	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		11	1122		194	1511			221	513	226	
v/s Ratio Prot		0.01	c0.14		c0.05	0.15			c0.04	0.04		
v/s Ratio Perm											0.00	
v/c Ratio		1.36	0.41		0.44	0.36			0.35	0.27	0.01	
Uniform Delay, d1		29.5	15.2		24.7	11.3			23.7	22.5	21.7	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		409.1	0.2		1.6	0.1			1.0	0.3	0.0	
Delay (s)		438.6	15.5		26.2	11.4			24.7	22.8	21.7	
Level of Service		F	B		C	B			C	C	C	
Approach Delay (s)			27.6			13.5				23.4		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	59.4	Sum of lost time (s)	17.2
Intersection Capacity Utilization	45.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	167	104	17
Future Volume (vph)	167	104	17
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1568
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	182	113	18
RTOR Reduction (vph)	0	0	15
Lane Group Flow (vph)	186	113	3
Confl. Peds. (#/hr)			
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	7.4	8.6	8.6
Effective Green, g (s)	7.4	8.6	8.6
Actuated g/C Ratio	0.12	0.14	0.14
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	423	507	227
v/s Ratio Prot	c0.05	0.03	
v/s Ratio Perm			0.00
v/c Ratio	0.44	0.22	0.01
Uniform Delay, d1	24.1	22.4	21.8
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.2	0.0
Delay (s)	24.8	22.7	21.8
Level of Service	C	C	C
Approach Delay (s)		23.9	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	641	34	194	242	0	0	350
Future Volume (vph)	0	0	0	641	34	194	242	0	0	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3282	1468	1641	3282			2584
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3282	1468	1641	3282			2584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	675	36	204	255	0	0	368
RTOR Reduction (vph)	0	0	0	0	13	0	0	0	0	247
Lane Group Flow (vph)	0	0	0	675	23	204	255	0	0	121
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				42.7	42.7	12.8	29.2			22.3
Effective Green, g (s)				42.7	42.7	12.8	29.2			22.3
Actuated g/C Ratio				0.63	0.63	0.19	0.43			0.33
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				2060	921	308	1409			847
v/s Ratio Prot				c0.21		c0.12	0.08			0.05
v/s Ratio Perm					0.02					
v/c Ratio				0.33	0.02	0.66	0.18			0.14
Uniform Delay, d1				5.9	4.8	25.6	12.0			16.1
Progression Factor				0.81	0.75	0.93	0.72			1.00
Incremental Delay, d2				0.4	0.0	4.0	0.3			0.2
Delay (s)				5.2	3.6	27.8	8.9			16.3
Level of Service				A	A	C	A			B
Approach Delay (s)	0.0			5.1			17.3		16.3	
Approach LOS	A			A			B		B	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

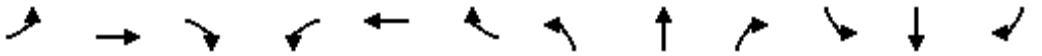
Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	37	25	53	84	5
Future Vol, veh/h	1	37	25	53	84	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	42	28	60	95	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	88	0	-	0	102	58
Stage 1	-	-	-	-	58	-
Stage 2	-	-	-	-	44	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1501	-	-	-	894	1005
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1501	-	-	-	893	1005
Mov Cap-2 Maneuver	-	-	-	-	893	-
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	976	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1501	-	-	-	899
HCM Lane V/C Ratio	0.001	-	-	-	0.112
HCM Control Delay (s)	7.4	0	-	-	9.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	19	81	9	11	41	75	566	33	54	446	93
Future Volume (veh/h)	78	19	81	9	11	41	75	566	33	54	446	93
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	80	19	83	9	11	42	77	578	34	55	455	95
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	122	133	113	14	82	70	118	2233	131	90	2297	1803
Arrive On Green	0.04	0.07	0.07	0.01	0.05	0.05	0.04	0.69	0.69	0.05	1.00	1.00
Sat Flow, veh/h	3291	1781	1510	1697	1781	1510	3291	3249	191	3291	3385	2657
Grp Volume(v), veh/h	80	19	83	9	11	42	77	301	311	55	455	95
Grp Sat Flow(s),veh/h/ln	1646	1781	1510	1697	1781	1510	1646	1692	1747	1646	1692	1329
Q Serve(g_s), s	3.3	1.4	7.3	0.7	0.8	3.7	3.1	9.2	9.2	2.2	0.0	0.0
Cycle Q Clear(g_c), s	3.3	1.4	7.3	0.7	0.8	3.7	3.1	9.2	9.2	2.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	122	133	113	14	82	70	118	1163	1201	90	2297	1803
V/C Ratio(X)	0.66	0.14	0.74	0.63	0.13	0.60	0.65	0.26	0.26	0.61	0.20	0.05
Avail Cap(c_a), veh/h	237	616	522	72	563	477	227	1163	1201	179	2297	1803
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99
Uniform Delay (d), s/veh	64.6	58.8	61.6	67.2	62.3	63.6	64.7	8.1	8.1	63.6	0.0	0.0
Incr Delay (d2), s/veh	2.2	1.1	18.6	15.4	1.1	12.2	2.2	0.5	0.5	2.5	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.7	3.4	0.4	0.4	1.7	1.3	3.2	3.3	0.9	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.8	59.9	80.2	82.6	63.4	75.8	67.0	8.6	8.6	66.1	0.2	0.1
LnGrp LOS	E	E	F	F	E	E	E	A	A	E	A	A
Approach Vol, veh/h		182			62			689			605	
Approach Delay, s/veh		72.2			74.6			15.1			6.2	
Approach LOS		E			E			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	99.9	8.4	17.5	11.5	98.7	12.2	13.6
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 7.4	48.3	* 5.8	* 47	* 9.4	46.3	* 9.8	* 43
Max Q Clear Time (g_c+I1), s	4.2	11.2	2.7	9.3	5.1	2.0	5.3	5.7
Green Ext Time (p_c), s	0.0	9.9	0.0	0.8	0.0	8.7	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	20.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	4	4	23	1	115	2	538	24	81	394	2
Future Vol, veh/h	2	4	4	23	1	115	2	538	24	81	394	2
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	2	4	4	24	1	122	2	572	26	86	419	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	885	1195	212	973	1183	300	422	0	0	598	0	0
Stage 1	593	593	-	589	589	-	-	-	-	-	-	-
Stage 2	292	602	-	384	594	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.68	6.68	7.08	4.28	-	-	4.28	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	229	175	772	197	178	676	1085	-	-	928	-	-
Stage 1	442	475	-	445	477	-	-	-	-	-	-	-
Stage 2	672	470	-	592	474	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	173	158	771	178	161	676	1084	-	-	928	-	-
Mov Cap-2 Maneuver	173	158	-	178	161	-	-	-	-	-	-	-
Stage 1	441	430	-	444	476	-	-	-	-	-	-	-
Stage 2	548	469	-	529	429	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.7	16.7	0	1.6
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1084	-	-	163	771	455	928	-	-
HCM Lane V/C Ratio	0.002	-	-	0.039	0.006	0.325	0.093	-	-
HCM Control Delay (s)	8.3	-	-	28	9.7	16.7	9.3	-	-
HCM Lane LOS	A	-	-	D	A	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	1.4	0.3	-	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	132	311	18	49	240	8	1	24	239	218	3	9
Future Volume (vph)	132	311	18	49	240	8	1	24	239	218	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00		1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548		1829	1568		1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00		0.99	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548		1829	1568		1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	142	334	19	53	258	9	1	26	257	234	3	10
RTOR Reduction (vph)	0	0	13	0	0	7	0	0	0	198	0	0
Lane Group Flow (vph)	142	334	6	0	311	2	0	27	257	36	0	13
Confl. Peds. (#/hr)			1	1								
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	2	2		6	6		7	7	4		3	3
Permitted Phases			2			6				4		
Actuated Green, G (s)	17.0	17.0	17.0		12.8	12.8		1.3	8.9	8.9		0.5
Effective Green, g (s)	17.0	17.0	17.0		12.8	12.8		1.3	8.9	8.9		0.5
Actuated g/C Ratio	0.30	0.30	0.30		0.22	0.22		0.02	0.16	0.16		0.01
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	521	549	460		410	351		39	546	244		15
v/s Ratio Prot	0.08	c0.18			c0.17			c0.02	c0.07			0.01
v/s Ratio Perm			0.00			0.00				0.02		
v/c Ratio	0.27	0.61	0.01		0.76	0.01		0.69	0.47	0.15		0.87
Uniform Delay, d1	15.3	17.2	14.1		20.7	17.2		27.7	22.0	20.8		28.3
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	0.3	1.9	0.0		7.8	0.0		41.8	0.6	0.3		162.9
Delay (s)	15.6	19.1	14.1		28.6	17.2		69.5	22.6	21.1		191.2
Level of Service	B	B	B		C	B		E	C	C		F
Approach Delay (s)		17.9			28.2				24.4			
Approach LOS		B			C				C			

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	57.1	Sum of lost time (s)	17.9
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	137	66
Future Volume (vph)	137	66
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	147	71
RTOR Reduction (vph)	0	61
Lane Group Flow (vph)	147	10
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	8.1	8.1
Effective Green, g (s)	8.1	8.1
Actuated g/C Ratio	0.14	0.14
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	497	222
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.01
v/c Ratio	0.30	0.05
Uniform Delay, d1	21.9	21.2
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	0.1
Delay (s)	22.3	21.2
Level of Service	C	C
Approach Delay (s)	31.5	
Approach LOS	C	

Intersection Summary

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	147	9	22	187	16	7	5	29	8	4	2
Future Vol, veh/h	0	147	9	22	187	16	7	5	29	8	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	163	10	24	208	18	8	6	32	9	4	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	226	0	0	173	0	0	436	442	168	452	438	217
Stage 1	-	-	-	-	-	-	168	168	-	265	265	-
Stage 2	-	-	-	-	-	-	268	274	-	187	173	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1337	-	-	1398	-	-	529	508	874	516	511	820
Stage 1	-	-	-	-	-	-	832	758	-	738	688	-
Stage 2	-	-	-	-	-	-	735	681	-	812	754	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1337	-	-	1398	-	-	516	498	874	485	501	820
Mov Cap-2 Maneuver	-	-	-	-	-	-	516	498	-	485	501	-
Stage 1	-	-	-	-	-	-	832	758	-	738	674	-
Stage 2	-	-	-	-	-	-	714	667	-	776	754	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	10.3	12.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	722	1337	-	-	1398	-	-	520
HCM Lane V/C Ratio	0.063	-	-	-	0.017	-	-	0.03
HCM Control Delay (s)	10.3	0	-	-	7.6	0	-	12.1
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.1

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	3	185	29	0	169	26	14	0	0	42	0	2
Future Vol, veh/h	3	185	29	0	169	26	14	0	0	42	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	210	33	0	192	30	16	0	0	48	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	222	0	0	243	0	0	441	455	227	440	456	207
Stage 1	-	-	-	-	-	-	233	233	-	207	207	-
Stage 2	-	-	-	-	-	-	208	222	-	233	249	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1341	-	-	1317	-	-	525	500	810	526	499	831
Stage 1	-	-	-	-	-	-	768	710	-	793	729	-
Stage 2	-	-	-	-	-	-	792	718	-	768	699	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1341	-	-	1317	-	-	522	499	810	525	498	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	499	-	525	498	-
Stage 1	-	-	-	-	-	-	766	708	-	791	729	-
Stage 2	-	-	-	-	-	-	790	718	-	766	697	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	12.1	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	522	-	1341	-	-	1317	-	-	534
HCM Lane V/C Ratio	0.03	-	0.003	-	-	-	-	-	0.094
HCM Control Delay (s)	12.1	0	7.7	0	-	0	-	-	12.4
HCM Lane LOS	B	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	0	-	-	0	-	-	0.3



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	172	23	117	157	159	377	14	36	67	379	60
Future Volume (vph)	32	172	23	117	157	159	377	14	36	67	379	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.89		1.00	0.90		1.00	0.96
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1568		1752	3087		1752	1664		1752	1771
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1568		1752	3087		1752	1664		1752	1771
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	181	24	123	165	167	397	15	38	71	399	63
RTOR Reduction (vph)	0	0	20	0	0	261	0	0	61	0	0	13
Lane Group Flow (vph)	34	181	4	0	288	303	0	15	48	0	399	73
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	NA		Prot	NA
Protected Phases	7	4		3	3	8		5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	2.2	13.6	13.6		16.5	27.9		0.6	11.7		22.8	33.9
Effective Green, g (s)	2.2	13.6	13.6		16.5	27.9		0.6	11.7		22.8	33.9
Actuated g/C Ratio	0.03	0.17	0.17		0.20	0.34		0.01	0.14		0.28	0.42
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	47	585	261		355	1058		12	239		490	737
v/s Ratio Prot	0.02	0.05			c0.16	c0.10		0.01	c0.03		c0.23	0.04
v/s Ratio Perm			0.00									
v/c Ratio	0.72	0.31	0.02		0.81	0.29		1.25	0.20		0.81	0.10
Uniform Delay, d1	39.3	29.8	28.3		31.0	19.5		40.4	30.7		27.3	14.5
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	42.4	0.3	0.0		13.1	0.2		352.1	0.4		10.0	0.1
Delay (s)	81.7	30.1	28.3		44.1	19.6		392.5	31.1		37.3	14.5
Level of Service	F	C	C		D	B		F	C		D	B
Approach Delay (s)		37.3				27.9			74.9			33.3
Approach LOS		D				C			E			C

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	81.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	22
Future Volume (vph)	22
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	23
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

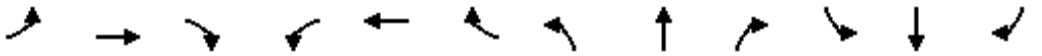
Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	852	2	0	860	0	45
Future Vol, veh/h	852	2	0	860	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	968	2	0	977	0	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	485
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	-	-	0	-	0	525
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	525
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

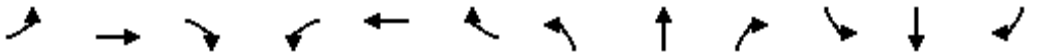
Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	525	-	-	-
HCM Lane V/C Ratio	0.097	-	-	-
HCM Control Delay (s)	12.6	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.3	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	780	117	109	701	0	0	0	134	233	41	159
Future Volume (vph)	0	780	117	109	701	0	0	0	134	233	41	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1845	1547
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1845	1547
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	857	129	120	770	0	0	0	147	256	45	175
RTOR Reduction (vph)	0	0	51	0	0	0	0	0	78	0	0	136
Lane Group Flow (vph)	0	857	78	120	770	0	0	0	69	256	45	39
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		76.5	76.5	14.0	96.2				26.8	18.1	31.3	31.3
Effective Green, g (s)		76.5	76.5	14.0	96.2				26.8	18.1	31.3	31.3
Actuated g/C Ratio		0.55	0.55	0.10	0.69				0.19	0.13	0.22	0.22
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		1915	856	175	2408				305	439	412	345
v/s Ratio Prot		c0.24		c0.07	0.22				c0.04	c0.08	0.02	
v/s Ratio Perm			0.05									0.03
v/c Ratio		0.45	0.09	0.69	0.32				0.23	0.58	0.11	0.11
Uniform Delay, d1		19.1	15.2	60.9	8.8				47.8	57.4	43.3	43.3
Progression Factor		1.00	1.00	1.25	0.63				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.8	0.2	7.6	0.3				0.1	3.4	0.3	0.4
Delay (s)		19.8	15.4	83.6	5.8				48.0	60.8	43.5	43.7
Level of Service		B	B	F	A				D	E	D	D
Approach Delay (s)		19.2			16.3			48.0			52.9	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	240	778	148	125	655	107	77	227	107	64	253	257
Future Volume (veh/h)	240	778	148	125	655	107	77	227	107	64	253	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	255	828	157	133	697	114	82	241	114	68	269	273
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	258	2066	921	179	1493	244	103	434	194	86	500	393
Arrive On Green	0.29	1.00	1.00	0.10	0.98	0.98	0.06	0.25	0.25	0.05	0.14	0.14
Sat Flow, veh/h	1767	3526	1572	3428	3033	496	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	255	828	157	133	405	406	82	241	114	68	269	273
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1766	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	20.1	0.0	0.0	5.3	0.9	0.9	3.3	8.4	8.9	5.3	9.9	13.1
Cycle Q Clear(g_c), s	20.1	0.0	0.0	5.3	0.9	0.9	3.3	8.4	8.9	5.3	9.9	13.1
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	258	2066	921	179	868	869	103	434	194	86	500	393
V/C Ratio(X)	0.99	0.40	0.17	0.75	0.47	0.47	0.80	0.56	0.59	0.79	0.54	0.69
Avail Cap(c_a), veh/h	258	2066	921	250	868	869	103	761	339	151	957	751
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.94	0.94	0.94	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	0.0	61.8	0.6	0.6	65.4	49.4	49.6	65.9	55.8	57.2
Incr Delay (d2), s/veh	49.7	0.5	0.4	3.8	1.7	1.7	30.4	1.8	4.5	5.9	1.5	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.1	0.1	2.3	0.6	0.6	1.8	3.5	3.5	2.5	4.5	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	99.2	0.5	0.4	65.6	2.2	2.2	95.8	51.2	54.2	71.8	57.3	60.9
LnGrp LOS	F	A	A	E	A	A	F	D	D	E	E	E
Approach Vol, veh/h		1240			944			437			610	
Approach Delay, s/veh		20.8			11.2			60.3			60.6	
Approach LOS		C			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.4	23.3	13.9	89.3	10.8	26.0	27.0	76.2
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 12	30.2	* 10	* 61	* 4.2	38.0	* 20	* 51
Max Q Clear Time (g_c+I1), s	7.3	10.9	7.3	2.0	5.3	15.1	22.1	2.9
Green Ext Time (p_c), s	0.0	2.7	0.1	13.3	0.0	4.7	0.0	9.8

Intersection Summary	
HCM 6th Ctrl Delay	30.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	770	0	0	668	184	41
Future Volume (vph)	770	0	0	668	184	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	802	0	0	696	192	43
RTOR Reduction (vph)	0	0	0	0	0	34
Lane Group Flow (vph)	802	0	0	696	192	9
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	43.0			43.0	14.8	14.8
Effective Green, g (s)	43.0			43.0	14.8	14.8
Actuated g/C Ratio	0.61			0.61	0.21	0.21
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2153			2153	370	331
v/s Ratio Prot	c0.23			0.20	c0.11	
v/s Ratio Perm						0.01
v/c Ratio	0.37			0.32	0.52	0.03
Uniform Delay, d1	6.8			6.5	24.4	21.9
Progression Factor	0.83			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.4	2.5	0.1
Delay (s)	6.1			6.9	27.0	22.0
Level of Service	A			A	C	C
Approach Delay (s)	6.1			6.9	26.1	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	16	35	563	213	55	417	11	19	92	213	23	2
Future Volume (vph)	16	35	563	213	55	417	11	19	92	213	23	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	1.00			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3360		1752	3490			1752	3505	1568	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3360		1752	3490			1752	3505	1568	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	37	599	227	59	444	12	20	98	227	24	2
RTOR Reduction (vph)	0	0	42	0	0	2	0	0	0	0	19	0
Lane Group Flow (vph)	0	54	784	0	59	454	0	0	118	227	5	0
Confl. Peds. (#/hr)							8					
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		3.1	22.7		3.4	22.6			13.6	13.7	13.7	
Effective Green, g (s)		3.1	22.7		3.4	22.6			13.6	13.7	13.7	
Actuated g/C Ratio		0.05	0.34		0.05	0.34			0.21	0.21	0.21	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		82	1157		90	1196			361	728	325	
v/s Ratio Prot		0.03	c0.23		c0.03	0.13			c0.07	0.06		
v/s Ratio Perm											0.00	
v/c Ratio		0.66	0.68		0.66	0.38			0.33	0.31	0.02	
Uniform Delay, d1		30.9	18.5		30.7	16.4			22.3	22.1	20.7	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		17.5	1.6		15.9	0.2			0.5	0.2	0.0	
Delay (s)		48.4	20.1		46.6	16.6			22.8	22.4	20.8	
Level of Service		D	C		D	B			C	C	C	
Approach Delay (s)			21.8			20.0				22.4		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	22.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	65.9	Sum of lost time (s)	17.2
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	243	134	35
Future Volume (vph)	243	134	35
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1548
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1548
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	259	143	37
RTOR Reduction (vph)	0	0	32
Lane Group Flow (vph)	261	143	5
Confl. Peds. (#/hr)			1
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	9.3	9.4	9.4
Effective Green, g (s)	9.3	9.4	9.4
Actuated g/C Ratio	0.14	0.14	0.14
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	479	499	220
v/s Ratio Prot	c0.08	0.04	
v/s Ratio Perm			0.00
v/c Ratio	0.54	0.29	0.02
Uniform Delay, d1	26.3	25.3	24.3
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.3	0.0
Delay (s)	27.6	25.6	24.3
Level of Service	C	C	C
Approach Delay (s)		26.7	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	702	56	279	250	0	0	382
Future Volume (vph)	0	0	0	702	56	279	250	0	0	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frpb, ped/bikes				1.00	0.98	1.00	1.00			1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00			1.00
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3471	1520	1736	3471			2733
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3471	1520	1736	3471			2733
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	739	59	294	263	0	0	402
RTOR Reduction (vph)	0	0	0	0	24	0	0	0	0	246
Lane Group Flow (vph)	0	0	0	739	35	294	263	0	0	156
Confl. Peds. (#/hr)					1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				41.2	41.2	16.3	26.4			27.1
Effective Green, g (s)				41.2	41.2	16.3	26.4			27.1
Actuated g/C Ratio				0.59	0.59	0.23	0.38			0.39
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				2042	894	404	1309			1058
v/s Ratio Prot				c0.21		c0.17	0.08			0.06
v/s Ratio Perm					0.02					
v/c Ratio				0.36	0.04	0.73	0.20			0.15
Uniform Delay, d1				7.5	6.1	24.8	14.7			13.9
Progression Factor				1.20	2.78	0.92	0.82			1.00
Incremental Delay, d2				0.5	0.1	5.3	0.3			0.2
Delay (s)				9.5	16.9	28.1	12.4			14.1
Level of Service				A	B	C	B			B
Approach Delay (s)	0.0			10.0			20.7		14.1	
Approach LOS	A			B			C		B	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

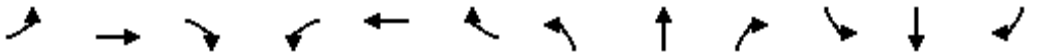
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	39	42	83	78	2
Future Vol, veh/h	5	39	42	83	78	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	42	46	90	85	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	136	0	-	0	143	91
Stage 1	-	-	-	-	91	-
Stage 2	-	-	-	-	52	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1442	-	-	-	847	964
Stage 1	-	-	-	-	930	-
Stage 2	-	-	-	-	968	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1442	-	-	-	844	964
Mov Cap-2 Maneuver	-	-	-	-	844	-
Stage 1	-	-	-	-	926	-
Stage 2	-	-	-	-	968	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1442	-	-	-	847
HCM Lane V/C Ratio	0.004	-	-	-	0.103
HCM Control Delay (s)	7.5	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	20	270	29	17	87	146	477	30	55	483	119
Future Volume (veh/h)	210	20	270	29	17	87	146	477	30	55	483	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	221	21	284	31	18	92	154	502	32	58	508	125
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	271	388	329	39	283	239	202	1833	117	95	1809	1420
Arrive On Green	0.08	0.21	0.21	0.02	0.15	0.15	0.06	0.54	0.54	0.06	1.00	1.00
Sat Flow, veh/h	3428	1856	1572	1767	1856	1569	3428	3366	214	3428	3526	2768
Grp Volume(v), veh/h	221	21	284	31	18	92	154	262	272	58	508	125
Grp Sat Flow(s),veh/h/ln	1714	1856	1572	1767	1856	1569	1714	1763	1817	1714	1763	1384
Q Serve(g_s), s	8.9	1.3	24.4	2.4	1.2	7.4	6.2	11.2	11.2	2.3	0.0	0.0
Cycle Q Clear(g_c), s	8.9	1.3	24.4	2.4	1.2	7.4	6.2	11.2	11.2	2.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	271	388	329	39	283	239	202	960	989	95	1809	1420
V/C Ratio(X)	0.82	0.05	0.86	0.79	0.06	0.38	0.76	0.27	0.27	0.61	0.28	0.09
Avail Cap(c_a), veh/h	387	689	584	86	570	482	304	960	989	157	1809	1420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	63.5	44.3	53.4	68.1	50.8	53.4	64.9	17.1	17.1	65.4	0.0	0.0
Incr Delay (d2), s/veh	5.8	0.1	13.7	12.1	0.1	1.5	2.6	0.7	0.7	2.3	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.6	10.9	1.2	0.6	3.0	2.7	4.6	4.7	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.3	44.4	67.2	80.2	50.9	55.0	67.5	17.8	17.8	67.7	0.4	0.1
LnGrp LOS	E	D	E	F	D	D	E	B	B	E	A	A
Approach Vol, veh/h		526			141			688			691	
Approach Delay, s/veh		67.1			60.0			28.9			6.0	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	82.6	10.3	36.6	14.9	78.2	18.3	28.6
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 6.4	47.3	* 6.8	* 52	* 12	41.3	* 16	* 43
Max Q Clear Time (g_c+I1), s	4.3	13.2	4.4	26.4	8.2	2.0	10.9	9.4
Green Ext Time (p_c), s	0.0	8.1	0.0	2.6	0.1	9.8	0.2	0.6

Intersection Summary	
HCM 6th Ctrl Delay	33.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

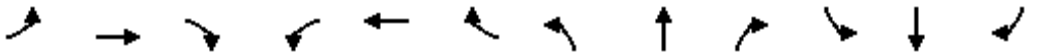
Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	11	6	26	7	108	5	608	33	156	670	9
Future Vol, veh/h	5	11	6	26	7	108	5	608	33	156	670	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	11	6	27	7	110	5	620	34	159	684	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1331	1671	347	1313	1658	327	693	0	0	654	0	0
Stage 1	1007	1007	-	647	647	-	-	-	-	-	-	-
Stage 2	324	664	-	666	1011	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	112	94	646	115	96	666	891	-	-	922	-	-
Stage 1	256	314	-	424	462	-	-	-	-	-	-	-
Stage 2	660	454	-	413	313	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	75	77	646	88	79	666	891	-	-	922	-	-
Mov Cap-2 Maneuver	75	77	-	88	79	-	-	-	-	-	-	-
Stage 1	254	260	-	421	459	-	-	-	-	-	-	-
Stage 2	539	451	-	324	259	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	50.1	35.2	0.1	1.8
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	891	-	-	76	646	258	922	-	-
HCM Lane V/C Ratio	0.006	-	-	0.215	0.009	0.558	0.173	-	-
HCM Control Delay (s)	9.1	-	-	64.9	10.6	35.2	9.7	-	-
HCM Lane LOS	A	-	-	F	B	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	3.1	0.6	-	-



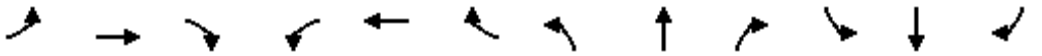
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	4	4	23	1	115	2	538	24	81	394	2
Future Volume (veh/h)	2	4	4	23	1	115	2	538	24	81	394	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	2	4	4	24	1	122	2	572	26	86	419	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	4	87	87	40	2	192	4	962	44	105	1214	6
Arrive On Green	0.00	0.11	0.11	0.02	0.13	0.13	0.00	0.29	0.29	0.06	0.35	0.35
Sat Flow, veh/h	1682	809	809	1682	12	1483	1682	3269	148	1682	3426	16
Grp Volume(v), veh/h	2	0	8	24	0	123	2	293	305	86	205	216
Grp Sat Flow(s),veh/h/ln	1682	0	1618	1682	0	1496	1682	1678	1740	1682	1678	1764
Q Serve(g_s), s	0.0	0.0	0.2	0.5	0.0	3.0	0.0	5.8	5.8	1.9	3.5	3.5
Cycle Q Clear(g_c), s	0.0	0.0	0.2	0.5	0.0	3.0	0.0	5.8	5.8	1.9	3.5	3.5
Prop In Lane	1.00		0.50	1.00		0.99	1.00		0.09	1.00		0.01
Lane Grp Cap(c), veh/h	4	0	175	40	0	193	4	494	512	105	595	625
V/C Ratio(X)	0.46	0.00	0.05	0.61	0.00	0.64	0.46	0.59	0.60	0.82	0.35	0.35
Avail Cap(c_a), veh/h	188	0	1455	188	0	1399	188	1400	1451	188	1400	1471
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	0.0	15.4	18.6	0.0	15.9	19.2	11.6	11.6	17.8	9.1	9.1
Incr Delay (d2), s/veh	60.2	0.0	0.1	14.0	0.0	3.4	60.2	1.1	1.1	14.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.3	0.0	1.0	0.1	1.6	1.6	1.0	0.8	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.4	0.0	15.5	32.6	0.0	19.3	79.4	12.8	12.7	32.0	9.5	9.5
LnGrp LOS	E	A	B	C	A	B	E	B	B	C	A	A
Approach Vol, veh/h		10			147			600			507	
Approach Delay, s/veh		28.3			21.5			13.0			13.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	16.6	5.1	10.2	4.3	18.9	4.3	11.0
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.3	34.6	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	3.9	7.8	2.5	2.2	2.0	5.5	2.0	5.0
Green Ext Time (p_c), s	0.0	3.3	0.0	0.0	0.0	2.2	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	11	6	26	7	108	5	608	33	156	670	9
Future Volume (veh/h)	5	11	6	26	7	108	5	608	33	156	670	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	5	11	6	27	7	110	5	620	34	159	684	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	10	106	58	46	11	170	10	1003	55	185	1406	18
Arrive On Green	0.01	0.09	0.09	0.03	0.11	0.11	0.01	0.30	0.30	0.10	0.39	0.39
Sat Flow, veh/h	1767	1129	616	1767	95	1492	1767	3399	186	1767	3563	47
Grp Volume(v), veh/h	5	0	17	27	0	117	5	321	333	159	338	355
Grp Sat Flow(s),veh/h/ln	1767	0	1745	1767	0	1587	1767	1763	1822	1767	1763	1847
Q Serve(g_s), s	0.1	0.0	0.4	0.6	0.0	2.9	0.1	6.4	6.5	3.6	5.9	5.9
Cycle Q Clear(g_c), s	0.1	0.0	0.4	0.6	0.0	2.9	0.1	6.4	6.5	3.6	5.9	5.9
Prop In Lane	1.00		0.35	1.00		0.94	1.00		0.10	1.00		0.03
Lane Grp Cap(c), veh/h	10	0	163	46	0	181	10	520	538	185	696	729
V/C Ratio(X)	0.52	0.00	0.10	0.59	0.00	0.65	0.52	0.62	0.62	0.86	0.49	0.49
Avail Cap(c_a), veh/h	185	0	1472	185	0	1393	185	1380	1426	185	1380	1446
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	0.0	17.0	19.8	0.0	17.4	20.3	12.5	12.5	18.1	9.3	9.3
Incr Delay (d2), s/veh	38.1	0.0	0.3	11.6	0.0	3.8	38.1	1.2	1.2	30.8	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.4	0.0	1.1	0.1	1.9	2.0	2.7	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.4	0.0	17.3	31.4	0.0	21.2	58.4	13.7	13.6	48.8	9.8	9.8
LnGrp LOS	E	A	B	C	A	C	E	B	B	D	A	A
Approach Vol, veh/h		22			144			659			852	
Approach Delay, s/veh		26.6			23.1			14.0			17.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	17.4	5.3	9.8	4.4	21.5	4.4	10.7
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.3	34.6	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	5.6	8.5	2.6	2.4	2.1	7.9	2.1	4.9
Green Ext Time (p_c), s	0.0	3.6	0.0	0.0	0.0	3.9	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	16.5
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	SB	SB	SE	SE	SE	SE	NW	NW	NW
Directions Served	L	T	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	128	135	285	75	4	40	60	51	12	27	52
Average Queue (ft)	48	43	109	30	0	12	3	9	0	4	3
95th Queue (ft)	99	89	203	80	2	33	22	30	4	18	22
Link Distance (ft)		1215	1312			2556	2556			1128	1128
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	140			50	200			70	75		
Storage Blk Time (%)	0	1	30	0			0	0			
Queuing Penalty (veh)	0	2	4	0			0	0			

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	24	31	28
Average Queue (ft)	2	16	11
95th Queue (ft)	14	37	31
Link Distance (ft)	3178	2737	2634
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Future N-S Road & Floral Avenue

Movement	EB	NB	SB
Directions Served	LTR	L	LTR
Maximum Queue (ft)	74	31	31
Average Queue (ft)	2	16	15
95th Queue (ft)	25	41	39
Link Distance (ft)	3178		1314
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		250	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	TR	L	TR	L	TR
Maximum Queue (ft)	59	72	68	70	194	275	177	88	84	168	88
Average Queue (ft)	19	30	29	17	157	91	61	21	39	89	16
95th Queue (ft)	51	61	59	48	218	245	127	54	69	148	55
Link Distance (ft)		251	251			374	374		346		716
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100			100	340			100		100	
Storage Blk Time (%)					20			0	0	8	0
Queuing Penalty (veh)					11			0	0	2	0

Intersection: 5: Eastern Driveway & Floral Avenue

Movement	NB
Directions Served	R
Maximum Queue (ft)	70
Average Queue (ft)	31
95th Queue (ft)	57
Link Distance (ft)	375
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	156	155	45	90	262	224	42	179	199	70	68
Average Queue (ft)	62	73	12	40	57	47	17	49	63	19	30
95th Queue (ft)	112	127	35	76	156	126	36	105	114	51	58
Link Distance (ft)	234	234			513	513	219			1827	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		3			1						
Queuing Penalty (veh)		1			0						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	150	424	415	120	130	250	282	274	73	89	159	135
Average Queue (ft)	115	144	128	35	57	61	137	131	27	28	86	21
95th Queue (ft)	170	309	281	108	110	155	235	248	65	65	149	74
Link Distance (ft)		513	513				471	471			578	578
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100			60	150	150			170	170		
Storage Blk Time (%)	26	8	22	0	0	0	7				0	1
Queuing Penalty (veh)	76	15	22	1	0	0	10				0	1

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	T	T	R	R
Maximum Queue (ft)	130	93	181	144	98	93
Average Queue (ft)	33	34	99	53	51	40
95th Queue (ft)	71	73	163	101	90	74
Link Distance (ft)			299	299		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	80	100			100	100
Storage Blk Time (%)	0	0	13	4	0	0
Queuing Penalty (veh)	0	0	4	8	0	0

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	R
Maximum Queue (ft)	149	157	184	148	204	70
Average Queue (ft)	35	51	61	50	94	38
95th Queue (ft)	86	105	137	107	153	83
Link Distance (ft)	471	471	556	556	1193	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						40
Storage Blk Time (%)					39	0
Queuing Penalty (veh)					14	1

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	49	138	164	76	113	103	82	79	66	58	81	41
Average Queue (ft)	4	43	63	32	59	34	24	21	29	11	23	17
95th Queue (ft)	20	98	132	67	101	86	60	52	57	38	57	34
Link Distance (ft)		556	556		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)		3			1				0			
Queuing Penalty (veh)		0			1				0			

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	69
Average Queue (ft)	27
95th Queue (ft)	59
Link Distance (ft)	2910
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	133	156	192	184	186	173	157
Average Queue (ft)	38	42	98	37	53	107	49
95th Queue (ft)	97	106	183	93	108	164	121
Link Distance (ft)	762	762		578	578	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			20	1		0	0
Queuing Penalty (veh)			24	2		1	0

Intersection: 11: Stillman Street & Southern Driveway

Movement	SB
Directions Served	LR
Maximum Queue (ft)	66
Average Queue (ft)	32
95th Queue (ft)	51
Link Distance (ft)	454
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	90	118	53	56	48	91	51	151	69	242	240	78
Average Queue (ft)	23	45	9	18	12	12	22	59	15	91	113	40
95th Queue (ft)	72	93	33	45	36	53	46	109	55	185	209	77
Link Distance (ft)			307			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)	0	3				0						
Queuing Penalty (veh)	0	3				0						

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	74	287	300	69
Average Queue (ft)	10	101	107	21
95th Queue (ft)	43	220	234	49
Link Distance (ft)		762	762	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	320			320
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	25	31	53	77	31	183	178	265	235	283
Average Queue (ft)	2	4	17	42	1	93	90	80	52	79
95th Queue (ft)	12	21	44	74	10	166	164	182	131	175
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)								1	0	
Queuing Penalty (veh)								1	0	

Network Summary

Network wide Queuing Penalty: 207

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	NB	SB	SB	SE	SE	SE	SE	NW	NW	NW
Directions Served	L	T	R	LT	R	UL	T	T	R	T	T	R
Maximum Queue (ft)	105	284	115	262	56	47	107	100	66	24	19	24
Average Queue (ft)	47	104	4	129	11	6	31	24	24	1	3	1
95th Queue (ft)	92	186	38	204	48	23	69	66	53	8	12	8
Link Distance (ft)		1215		1312			2556	2556		1128	1128	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	140		80		50	200			70			120
Storage Blk Time (%)		11		40	0			0	0			
Queuing Penalty (veh)		16		3	0			1	0			

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	25	53	28
Average Queue (ft)	3	20	8
95th Queue (ft)	17	40	27
Link Distance (ft)	3178	2737	2634
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Future N-S Road & Floral Avenue

Movement	EB	NB	SB
Directions Served	LTR	L	LTR
Maximum Queue (ft)	31	31	49
Average Queue (ft)	1	11	26
95th Queue (ft)	10	35	46
Link Distance (ft)	3178		1314
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		250	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	TR	L	TR	L	TR
Maximum Queue (ft)	74	157	120	30	194	375	374	68	88	200	381
Average Queue (ft)	21	63	51	4	143	146	120	13	44	170	148
95th Queue (ft)	53	126	97	21	213	314	252	40	85	215	363
Link Distance (ft)		251	251			374	374		346		716
Upstream Blk Time (%)						1	0				
Queuing Penalty (veh)						5	1				
Storage Bay Dist (ft)	100			100	340			100		100	
Storage Blk Time (%)		3	2		29	5			0	32	0
Queuing Penalty (veh)		1	1		23	13			0	27	1

Intersection: 5: Eastern Driveway & Floral Avenue

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	T	T	R
Maximum Queue (ft)	390	376	52	31	118
Average Queue (ft)	73	77	3	2	35
95th Queue (ft)	278	293	22	12	82
Link Distance (ft)	374	374	234	234	375
Upstream Blk Time (%)	4	3			
Queuing Penalty (veh)	13	12			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	246	280	150	192	240	200	146	252	266	90	136
Average Queue (ft)	174	171	32	100	78	60	47	97	109	34	47
95th Queue (ft)	275	281	112	173	182	135	105	185	187	76	86
Link Distance (ft)	234	234			513	513	219			1827	
Upstream Blk Time (%)	14	14									
Queuing Penalty (veh)	64	62									
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		27		0	1						
Queuing Penalty (veh)		31		0	1						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	T	T	R	L	L	T	TR	L	L	T	T
Maximum Queue (ft)	150	539	574	120	199	249	380	415	131	279	287	215
Average Queue (ft)	140	338	331	49	75	52	194	213	50	63	130	62
95th Queue (ft)	173	591	630	136	142	167	322	342	107	145	220	181
Link Distance (ft)		513	513				471	471			578	578
Upstream Blk Time (%)		14	8									
Queuing Penalty (veh)		79	48									
Storage Bay Dist (ft)	100			60	150	150			170	170		
Storage Blk Time (%)	63	11	33	0	2	1	16				6	1
Queuing Penalty (veh)	244	26	48	0	8	5	19				5	1

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	SB	SB	SB	SB	SB
Directions Served	R	L	T	T	R	R
Maximum Queue (ft)	130	200	261	146	109	84
Average Queue (ft)	45	68	136	61	52	46
95th Queue (ft)	107	153	223	118	90	72
Link Distance (ft)			299	299		
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	80	100			100	100
Storage Blk Time (%)	1	3	25	4	1	0
Queuing Penalty (veh)	1	4	16	10	1	0

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	R
Maximum Queue (ft)	199	208	171	136	232	70
Average Queue (ft)	59	76	65	65	113	42
95th Queue (ft)	137	157	130	128	199	85
Link Distance (ft)	471	471	556	556	1193	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						40
Storage Blk Time (%)					35	1
Queuing Penalty (veh)					14	1

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	144	400	423	98	131	146	148	119	135	141	114	85
Average Queue (ft)	30	127	166	31	59	54	52	46	64	51	56	22
95th Queue (ft)	81	286	329	70	116	114	108	89	109	106	98	52
Link Distance (ft)		556	556		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)	0	12		0	2		0	0	10	0	0	
Queuing Penalty (veh)	0	6		1	1		0	0	2	0	0	

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	89
Average Queue (ft)	38
95th Queue (ft)	77
Link Distance (ft)	2910
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	3
Queuing Penalty (veh)	1

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	234	200	194	324	136	222	184
Average Queue (ft)	89	73	127	69	45	111	74
95th Queue (ft)	208	151	207	213	107	193	151
Link Distance (ft)	762	762		578	578	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			28	1		3	0
Queuing Penalty (veh)			36	2		5	0

Intersection: 11: Stillman Street & Southern Driveway

Movement	SB
Directions Served	LR
Maximum Queue (ft)	66
Average Queue (ft)	32
95th Queue (ft)	51
Link Distance (ft)	454
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	99	124	190	166	67	52	76	155	95	199	262	114
Average Queue (ft)	62	91	44	73	27	15	39	80	25	96	113	39
95th Queue (ft)	117	133	150	145	59	47	62	140	73	191	228	83
Link Distance (ft)			307			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)	4	22	0	2								
Queuing Penalty (veh)	10	62	0	5								

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	29	200	221	76	49
Average Queue (ft)	2	101	100	37	2
95th Queue (ft)	14	176	177	67	18
Link Distance (ft)		762	762		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	320			320	320
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	27	29	74	76	50	204	206	286	287	253
Average Queue (ft)	4	8	23	37	6	104	103	131	84	96
95th Queue (ft)	18	27	60	71	28	188	185	245	196	183
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)								3	0	
Queuing Penalty (veh)								11	0	

Network Summary

Network wide Queuing Penalty: 949

Appendix G: Near Term plus Project Traffic Conditions

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	160	176	13	44	310	14	5	125	177	2	13	151
Future Volume (vph)	160	176	13	44	310	14	5	125	177	2	13	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538		1798	1538	1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538		1798	1538	1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	176	193	14	48	341	15	5	137	195	2	14	166
RTOR Reduction (vph)	0	0	11	0	0	10	0	0	169	0	0	0
Lane Group Flow (vph)	176	193	3	0	389	5	5	137	26	0	16	166
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	Prot	NA
Protected Phases	2	2		6	6		7	4		3	3	8
Permitted Phases			2			6			4			
Actuated Green, G (s)	14.5	14.5	14.5		19.1	19.1	0.5	7.9	7.9		0.5	7.9
Effective Green, g (s)	14.5	14.5	14.5		19.1	19.1	0.5	7.9	7.9		0.5	7.9
Actuated g/C Ratio	0.24	0.24	0.24		0.32	0.32	0.01	0.13	0.13		0.01	0.13
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	416	438	372		573	490	14	453	202		14	453
v/s Ratio Prot	0.10	c0.11			c0.22		0.00	0.04			c0.01	c0.05
v/s Ratio Perm			0.00			0.00			0.02			
v/c Ratio	0.42	0.44	0.01		0.68	0.01	0.36	0.30	0.13		1.14	0.37
Uniform Delay, d1	19.2	19.3	17.2		17.7	13.9	29.5	23.5	23.0		29.7	23.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.7	0.0		3.2	0.0	14.9	0.4	0.3		291.3	0.5
Delay (s)	19.9	20.0	17.3		20.9	13.9	44.5	23.9	23.2		321.0	24.2
Level of Service	B	B	B		C	B	D	C	C		F	C
Approach Delay (s)		19.8			20.7			23.8				45.5
Approach LOS		B			C			C				D

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	59.9	Sum of lost time (s)	17.9
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	35
Future Volume (vph)	35
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	38
RTOR Reduction (vph)	33
Lane Group Flow (vph)	5
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	7.9
Effective Green, g (s)	7.9
Actuated g/C Ratio	0.13
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	202
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.02
Uniform Delay, d1	22.6
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	22.7
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	122	2	17	112	7	0	4	23	12	5	0
Future Vol, veh/h	0	122	2	17	112	7	0	4	23	12	5	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	139	2	19	127	8	0	5	26	14	6	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	135	0	0	141	0	0	312	313	140	325	310	131
Stage 1	-	-	-	-	-	-	140	140	-	169	169	-
Stage 2	-	-	-	-	-	-	172	173	-	156	141	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1443	-	-	1436	-	-	639	601	905	626	603	916
Stage 1	-	-	-	-	-	-	861	779	-	831	757	-
Stage 2	-	-	-	-	-	-	828	754	-	844	778	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1443	-	-	1436	-	-	627	593	905	598	595	916
Mov Cap-2 Maneuver	-	-	-	-	-	-	627	593	-	598	595	-
Stage 1	-	-	-	-	-	-	861	779	-	831	746	-
Stage 2	-	-	-	-	-	-	810	743	-	815	778	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	9.4	11.2
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	840	1443	-	-	1436	-	-	597
HCM Lane V/C Ratio	0.037	-	-	-	0.013	-	-	0.032
HCM Control Delay (s)	9.4	0	-	-	7.5	0	-	11.2
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	3	239	13	0	270	38	30	0	0	13	0	2
Future Vol, veh/h	3	239	13	0	270	38	30	0	0	13	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	291	16	0	329	46	37	0	0	16	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	375	0	0	307	0	0	660	682	299	659	667	352
Stage 1	-	-	-	-	-	-	307	307	-	352	352	-
Stage 2	-	-	-	-	-	-	353	375	-	307	315	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1178	-	-	1248	-	-	375	371	738	376	378	689
Stage 1	-	-	-	-	-	-	701	659	-	663	630	-
Stage 2	-	-	-	-	-	-	662	615	-	701	654	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1178	-	-	1248	-	-	372	370	738	375	376	689
Mov Cap-2 Maneuver	-	-	-	-	-	-	372	370	-	375	376	-
Stage 1	-	-	-	-	-	-	698	656	-	660	630	-
Stage 2	-	-	-	-	-	-	660	615	-	698	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0	15.7	14.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	372	-	1178	-	-	1248	-	-	399
HCM Lane V/C Ratio	0.098	-	0.003	-	-	-	-	-	0.046
HCM Control Delay (s)	15.7	0	8.1	0	-	0	-	-	14.5
HCM Lane LOS	C	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	0	-	-	0	-	-	0.1



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	22	205	25	147	242	276	238	26	44	114	189	19
Future Volume (vph)	22	205	25	147	242	276	238	26	44	114	189	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.93		1.00	0.89		1.00	0.96
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1568		1752	3228		1752	1645		1752	1780
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1568		1752	3228		1752	1645		1752	1780
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	27	250	30	179	295	337	290	32	54	139	230	23
RTOR Reduction (vph)	0	0	25	0	0	115	0	0	89	0	0	5
Lane Group Flow (vph)	27	250	5	0	474	512	0	32	104	0	230	25
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	NA		Prot	NA
Protected Phases	7	4		3	3	8		5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	2.2	15.4	15.4		32.5	45.7		3.7	14.7		16.3	27.3
Effective Green, g (s)	2.2	15.4	15.4		32.5	45.7		3.7	14.7		16.3	27.3
Actuated g/C Ratio	0.02	0.16	0.16		0.34	0.48		0.04	0.15		0.17	0.29
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	40	564	252		594	1541		67	252		298	507
v/s Ratio Prot	0.02	c0.07			c0.27	0.16		0.02	c0.06		c0.13	0.01
v/s Ratio Perm			0.00									
v/c Ratio	0.68	0.44	0.02		0.80	0.33		0.48	0.41		0.77	0.05
Uniform Delay, d1	46.4	36.3	33.8		28.6	15.5		45.1	36.6		37.9	24.8
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	36.7	0.6	0.0		7.4	0.1		5.3	1.1		11.7	0.0
Delay (s)	83.1	36.8	33.8		36.0	15.7		50.3	37.7		49.6	24.8
Level of Service	F	D	C		D	B		D	D		D	C
Approach Delay (s)		40.6				24.4			39.5			46.8
Approach LOS		D				C			D			D

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	95.7	Sum of lost time (s)	16.8
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	6
Future Volume (vph)	6
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.82
Adj. Flow (vph)	7
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

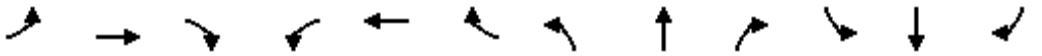
Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	649	3	0	901	0	72
Future Vol, veh/h	649	3	0	901	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	791	4	0	1099	0	88

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	398
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	-	-	0	-	0	599
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	599
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

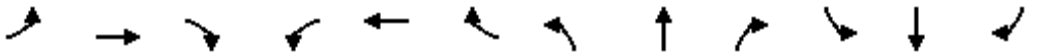
Approach	EB	WB	NB
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	599	-	-	-
HCM Lane V/C Ratio	0.147	-	-	-
HCM Control Delay (s)	12	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	672	49	54	739	0	0	0	51	165	23	162
Future Volume (vph)	0	672	49	54	739	0	0	0	51	165	23	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1827	1553
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1827	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	723	53	58	795	0	0	0	55	177	25	174
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	48	0	0	141
Lane Group Flow (vph)	0	723	33	58	795	0	0	0	7	177	25	33
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		85.8	85.8	8.0	99.5				18.7	14.9	26.0	26.0
Effective Green, g (s)		85.8	85.8	8.0	99.5				18.7	14.9	26.0	26.0
Actuated g/C Ratio		0.62	0.62	0.06	0.72				0.14	0.11	0.19	0.19
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		2158	965	100	2502				214	363	344	292
v/s Ratio Prot		c0.21		c0.03	0.23				0.00	c0.05	0.01	
v/s Ratio Perm			0.02									c0.02
v/c Ratio		0.34	0.03	0.58	0.32				0.03	0.49	0.07	0.11
Uniform Delay, d1		12.5	10.1	63.4	7.0				51.8	58.0	46.1	46.4
Progression Factor		1.00	1.00	1.34	0.33				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.4	0.1	4.5	0.3				0.0	2.5	0.2	0.4
Delay (s)		12.9	10.2	89.2	2.6				51.8	60.5	46.3	46.9
Level of Service		B	B	F	A				D	E	D	D
Approach Delay (s)		12.7			8.5			51.8			53.2	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	650	138	169	760	82	58	151	91	31	243	273
Future Volume (veh/h)	234	650	138	169	760	82	58	151	91	31	243	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	239	663	141	172	776	84	59	154	93	32	248	279
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	248	2000	892	219	1574	170	97	540	240	41	522	410
Arrive On Green	0.28	1.00	1.00	0.13	0.98	0.98	0.03	0.15	0.15	0.02	0.15	0.15
Sat Flow, veh/h	1767	3526	1572	3428	3208	347	3428	3526	1566	1767	3526	2768
Grp Volume(v), veh/h	239	663	141	172	426	434	59	154	93	32	248	279
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1793	1714	1763	1566	1767	1763	1384
Q Serve(g_s), s	18.4	0.0	0.0	6.7	1.2	1.2	2.3	5.3	7.4	2.5	8.9	13.2
Cycle Q Clear(g_c), s	18.4	0.0	0.0	6.7	1.2	1.2	2.3	5.3	7.4	2.5	8.9	13.2
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	248	2000	892	219	865	879	97	540	240	41	522	410
V/C Ratio(X)	0.96	0.33	0.16	0.79	0.49	0.49	0.61	0.29	0.39	0.79	0.48	0.68
Avail Cap(c_a), veh/h	248	2000	892	308	865	879	99	899	400	87	971	762
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.89	0.89	0.89	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.2	0.0	0.0	59.3	0.7	0.7	66.3	51.7	52.6	67.1	53.9	55.7
Incr Delay (d2), s/veh	44.8	0.4	0.4	4.8	1.8	1.8	6.5	0.5	1.6	11.7	1.2	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	0.1	0.1	2.9	0.7	0.7	1.1	2.4	3.0	1.3	4.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.0	0.4	0.4	64.1	2.5	2.4	72.8	52.2	54.2	78.8	55.0	59.1
LnGrp LOS	F	A	A	E	A	A	E	D	D	E	E	E
Approach Vol, veh/h		1043			1032			306			559	
Approach Delay, s/veh		21.9			12.7			56.8			58.4	
Approach LOS		C			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	27.2	15.4	85.6	10.5	26.5	26.0	75.0
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 6.8	35.2	* 12	* 57	* 4	38.0	* 19	* 50
Max Q Clear Time (g_c+I1), s	4.5	9.4	8.7	2.0	4.3	15.2	20.4	3.2
Green Ext Time (p_c), s	0.0	2.0	0.1	9.7	0.0	4.5	0.0	10.5

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	581	0	0	744	227	41
Future Volume (vph)	581	0	0	744	227	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	660	0	0	845	258	47
RTOR Reduction (vph)	0	0	0	0	0	29
Lane Group Flow (vph)	660	0	0	845	258	18
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	39.7			39.7	17.1	17.1
Effective Green, g (s)	39.7			39.7	17.1	17.1
Actuated g/C Ratio	0.58			0.58	0.25	0.25
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2016			2016	434	388
v/s Ratio Prot	0.19			c0.24	c0.15	
v/s Ratio Perm						0.01
v/c Ratio	0.33			0.42	0.59	0.05
Uniform Delay, d1	7.7			8.2	22.9	19.8
Progression Factor	0.89			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.6	3.4	0.1
Delay (s)	7.2			8.8	26.2	19.9
Level of Service	A			A	C	B
Approach Delay (s)	7.2			8.8	25.3	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	4	10	363	144	78	537	23	4	73	129	10	4
Future Volume (vph)	4	10	363	144	78	537	23	4	73	129	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3355		1752	3481			1752	3505	1546	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3355		1752	3481			1752	3505	1546	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	11	395	157	85	584	25	4	79	140	11	4
RTOR Reduction (vph)	0	0	45	0	0	3	0	0	0	0	9	0
Lane Group Flow (vph)	0	15	507	0	85	606	0	0	83	140	2	0
Confl. Peds. (#/hr)							4				4	
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		0.5	20.9		6.3	26.3			7.8	8.7	8.7	
Effective Green, g (s)		0.5	20.9		6.3	26.3			7.8	8.7	8.7	
Actuated g/C Ratio		0.01	0.35		0.10	0.44			0.13	0.14	0.14	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		14	1160		182	1515			226	504	222	
v/s Ratio Prot		0.01	0.15		c0.05	c0.17			c0.05	0.04		
v/s Ratio Perm											0.00	
v/c Ratio		1.07	0.44		0.47	0.40			0.37	0.28	0.01	
Uniform Delay, d1		29.9	15.2		25.5	11.7			24.0	23.0	22.1	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		265.6	0.3		1.9	0.2			1.0	0.3	0.0	
Delay (s)		295.5	15.5		27.4	11.8			25.1	23.4	22.2	
Level of Service		F	B		C	B			C	C	C	
Approach Delay (s)			22.9			13.7				23.9		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	17.2
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	177	104	17
Future Volume (vph)	177	104	17
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1568
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	192	113	18
RTOR Reduction (vph)	0	0	15
Lane Group Flow (vph)	196	113	3
Confl. Peds. (#/hr)			
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	7.7	8.6	8.6
Effective Green, g (s)	7.7	8.6	8.6
Actuated g/C Ratio	0.13	0.14	0.14
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	433	499	223
v/s Ratio Prot	c0.06	0.03	
v/s Ratio Perm			0.00
v/c Ratio	0.45	0.23	0.01
Uniform Delay, d1	24.4	23.0	22.2
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.2	0.0
Delay (s)	25.2	23.2	22.3
Level of Service	C	C	C
Approach Delay (s)		24.3	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	752	34	233	312	0	0	386
Future Volume (vph)	0	0	0	752	34	233	312	0	0	386
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3282	1468	1641	3282			2584
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3282	1468	1641	3282			2584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	792	36	245	328	0	0	406
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	257
Lane Group Flow (vph)	0	0	0	792	22	245	328	0	0	149
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				41.8	41.8	14.7	27.2			25.3
Effective Green, g (s)				41.8	41.8	14.7	27.2			25.3
Actuated g/C Ratio				0.61	0.61	0.21	0.39			0.37
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1988	889	349	1293			947
v/s Ratio Prot				c0.24		c0.15	0.10			0.06
v/s Ratio Perm					0.01					
v/c Ratio				0.40	0.02	0.70	0.25			0.16
Uniform Delay, d1				7.1	5.4	25.1	14.1			14.7
Progression Factor				0.85	0.69	0.90	0.68			1.00
Incremental Delay, d2				0.6	0.0	5.0	0.5			0.2
Delay (s)				6.6	3.8	27.6	10.0			14.9
Level of Service				A	A	C	B			B
Approach Delay (s)	0.0			6.5			17.5		14.9	
Approach LOS	A			A			B		B	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	69.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

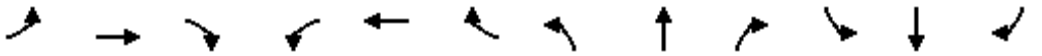
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	43	35	53	84	5
Future Vol, veh/h	1	43	35	53	84	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	49	40	60	95	6

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	100	0	-	0	121	70
Stage 1	-	-	-	-	70	-
Stage 2	-	-	-	-	51	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1486	-	-	-	872	990
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	969	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1486	-	-	-	871	990
Mov Cap-2 Maneuver	-	-	-	-	871	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	969	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1486	-	-	-	877
HCM Lane V/C Ratio	0.001	-	-	-	0.115
HCM Control Delay (s)	7.4	0	-	-	9.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	19	93	15	11	41	91	677	39	55	550	94
Future Volume (veh/h)	78	19	93	15	11	41	91	677	39	55	550	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	80	19	95	15	11	42	93	691	40	56	561	96
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	121	147	125	22	104	88	137	2204	127	91	2247	1764
Arrive On Green	0.04	0.08	0.08	0.01	0.06	0.06	0.04	0.68	0.68	0.06	1.00	1.00
Sat Flow, veh/h	3291	1781	1510	1697	1781	1510	3291	3252	188	3291	3385	2657
Grp Volume(v), veh/h	80	19	95	15	11	42	93	359	372	56	561	96
Grp Sat Flow(s),veh/h/ln	1646	1781	1510	1697	1781	1510	1646	1692	1748	1646	1692	1329
Q Serve(g_s), s	3.3	1.4	8.5	1.2	0.8	3.7	3.8	12.0	12.0	2.3	0.0	0.0
Cycle Q Clear(g_c), s	3.3	1.4	8.5	1.2	0.8	3.7	3.8	12.0	12.0	2.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.11	1.00		1.00
Lane Grp Cap(c), veh/h	121	147	125	22	104	88	137	1147	1184	91	2247	1764
V/C Ratio(X)	0.66	0.13	0.76	0.70	0.11	0.48	0.68	0.31	0.31	0.62	0.25	0.05
Avail Cap(c_a), veh/h	210	577	489	96	564	478	248	1147	1184	176	2247	1764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	65.6	58.7	61.9	67.9	61.5	62.9	65.2	9.1	9.1	64.5	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.9	18.9	14.0	0.7	5.9	2.2	0.7	0.7	2.5	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.7	3.9	0.6	0.4	1.6	1.6	4.2	4.4	1.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.9	59.5	80.8	81.9	62.2	68.8	67.5	9.8	9.8	67.0	0.3	0.1
LnGrp LOS	E	E	F	F	E	E	E	A	A	E	A	A
Approach Vol, veh/h		194			68			824			713	
Approach Delay, s/veh		73.4			70.6			16.3			5.5	
Approach LOS		E			E			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	99.9	8.9	18.7	12.3	98.0	12.3	15.4
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 7.4	50.6	* 7.8	* 45	* 10	47.6	* 8.8	* 44
Max Q Clear Time (g_c+I1), s	4.3	14.0	3.2	10.5	5.8	2.0	5.3	5.7
Green Ext Time (p_c), s	0.0	12.2	0.0	0.9	0.0	10.9	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	4	6	38	1	117	5	605	39	98	475	2
Future Vol, veh/h	2	4	6	38	1	117	5	605	39	98	475	2
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	2	4	6	40	1	124	5	644	41	104	505	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1049	1410	255	1138	1391	344	508	0	0	685	0	0
Stage 1	715	715	-	675	675	-	-	-	-	-	-	-
Stage 2	334	695	-	463	716	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.68	6.68	7.08	4.28	-	-	4.28	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	173	129	723	148	133	632	1006	-	-	859	-	-
Stage 1	372	416	-	394	435	-	-	-	-	-	-	-
Stage 2	634	425	-	530	416	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	125	113	723	129	116	632	1005	-	-	859	-	-
Mov Cap-2 Maneuver	125	113	-	129	116	-	-	-	-	-	-	-
Stage 1	370	365	-	392	433	-	-	-	-	-	-	-
Stage 2	505	423	-	456	365	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.8	27.9	0.1	1.7
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1005	-	-	117	723	319	859	-	-
HCM Lane V/C Ratio	0.005	-	-	0.055	0.009	0.52	0.121	-	-
HCM Control Delay (s)	8.6	-	-	37.5	10	27.9	9.8	-	-
HCM Lane LOS	A	-	-	E	B	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	2.8	0.4	-	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	229	438	18	55	378	8	1	24	241	313	3	9
Future Volume (vph)	229	438	18	55	378	8	1	24	241	313	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00		1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548		1833	1568		1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00		0.99	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548		1833	1568		1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	246	471	19	59	406	9	1	26	259	337	3	10
RTOR Reduction (vph)	0	0	13	0	0	6	0	0	0	294	0	0
Lane Group Flow (vph)	246	471	6	0	465	3	0	27	259	43	0	13
Confl. Peds. (#/hr)			1	1								
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	2	2		6	6		7	7	4		3	3
Permitted Phases			2			6				4		
Actuated Green, G (s)	24.4	24.4	24.4		22.0	22.0		1.3	9.4	9.4		0.6
Effective Green, g (s)	24.4	24.4	24.4		22.0	22.0		1.3	9.4	9.4		0.6
Actuated g/C Ratio	0.33	0.33	0.33		0.30	0.30		0.02	0.13	0.13		0.01
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	575	605	508		542	464		30	443	198		14
v/s Ratio Prot	0.14	c0.26			c0.25			c0.02	c0.07			0.01
v/s Ratio Perm			0.00			0.00				0.03		
v/c Ratio	0.43	0.78	0.01		0.86	0.01		0.90	0.58	0.22		0.93
Uniform Delay, d1	19.5	22.5	16.8		24.7	18.4		36.4	30.6	29.1		36.8
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	0.5	6.3	0.0		12.7	0.0		122.1	2.0	0.5		201.0
Delay (s)	20.0	28.8	16.8		37.4	18.4		158.6	32.6	29.7		237.8
Level of Service	C	C	B		D	B		F	C	C		F
Approach Delay (s)		25.5			37.0				36.5			
Approach LOS		C			D				D			

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	17.9
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	138	75
Future Volume (vph)	138	75
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	148	81
RTOR Reduction (vph)	0	72
Lane Group Flow (vph)	148	9
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	8.7	8.7
Effective Green, g (s)	8.7	8.7
Actuated g/C Ratio	0.12	0.12
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	410	183
v/s Ratio Prot	0.04	
v/s Ratio Perm		0.01
v/c Ratio	0.36	0.05
Uniform Delay, d1	30.2	29.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.5	0.1
Delay (s)	30.8	29.3
Level of Service	C	C
Approach Delay (s)	41.4	
Approach LOS	D	

Intersection Summary

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	190	9	98	226	18	7	5	132	12	4	2
Future Vol, veh/h	0	190	9	98	226	18	7	5	132	12	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	211	10	109	251	20	8	6	147	13	4	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	271	0	0	221	0	0	698	705	216	772	700	261
Stage 1	-	-	-	-	-	-	216	216	-	479	479	-
Stage 2	-	-	-	-	-	-	482	489	-	293	221	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1287	-	-	1342	-	-	354	360	821	315	362	775
Stage 1	-	-	-	-	-	-	784	722	-	566	553	-
Stage 2	-	-	-	-	-	-	564	548	-	713	719	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1287	-	-	1342	-	-	324	325	821	237	327	775
Mov Cap-2 Maneuver	-	-	-	-	-	-	324	325	-	237	327	-
Stage 1	-	-	-	-	-	-	784	722	-	566	500	-
Stage 2	-	-	-	-	-	-	504	495	-	581	719	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	11.3	19.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	728	1287	-	-	1342	-	-	275
HCM Lane V/C Ratio	0.22	-	-	-	0.081	-	-	0.073
HCM Control Delay (s)	11.3	0	-	-	7.9	0	-	19.1
HCM Lane LOS	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	0.8	0	-	-	0.3	-	-	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	3	539	47	0	581	26	32	0	0	42	0	2
Future Vol, veh/h	3	539	47	0	581	26	32	0	0	42	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	250	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	613	53	0	660	30	36	0	0	48	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	690	0	0	666	0	0	1322	1336	640	1321	1347	675
Stage 1	-	-	-	-	-	-	646	646	-	675	675	-
Stage 2	-	-	-	-	-	-	676	690	-	646	672	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	900	-	-	919	-	-	133	153	474	133	150	452
Stage 1	-	-	-	-	-	-	459	465	-	442	452	-
Stage 2	-	-	-	-	-	-	441	445	-	459	453	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	900	-	-	919	-	-	132	152	474	132	149	452
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	152	-	132	149	-
Stage 1	-	-	-	-	-	-	457	463	-	440	452	-
Stage 2	-	-	-	-	-	-	439	445	-	457	451	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	42.3	46.1
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	132	-	900	-	-	919	-	-	136
HCM Lane V/C Ratio	0.275	-	0.004	-	-	-	-	-	0.368
HCM Control Delay (s)	42.3	0	9	0	-	0	-	-	46.1
HCM Lane LOS	E	A	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	1	-	0	-	-	0	-	-	1.5



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	526	23	129	157	571	400	14	36	67	417	60
Future Volume (vph)	32	526	23	129	157	571	400	14	36	67	417	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.94		1.00	0.90		1.00	0.96
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1568		1752	3258		1752	1664		1752	1771
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1568		1752	3258		1752	1664		1752	1771
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	554	24	136	165	601	421	15	38	71	439	63
RTOR Reduction (vph)	0	0	19	0	0	95	0	0	61	0	0	12
Lane Group Flow (vph)	34	554	5	0	301	927	0	15	48	0	439	74
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	NA		Prot	NA
Protected Phases	7	4		3	3	8		5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	2.4	22.0	22.0		20.1	39.7		0.9	14.8		29.2	43.1
Effective Green, g (s)	2.4	22.0	22.0		20.1	39.7		0.9	14.8		29.2	43.1
Actuated g/C Ratio	0.02	0.21	0.21		0.20	0.39		0.01	0.14		0.28	0.42
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	40	749	335		342	1256		15	239		497	741
v/s Ratio Prot	0.02	0.16			c0.17	c0.28		0.01	c0.03		c0.25	0.04
v/s Ratio Perm			0.00									
v/c Ratio	0.85	0.74	0.02		0.88	0.74		1.00	0.20		0.88	0.10
Uniform Delay, d1	50.1	37.8	31.9		40.2	27.1		51.0	38.8		35.2	18.1
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	84.3	3.8	0.0		22.1	2.3		232.4	0.4		16.8	0.1
Delay (s)	134.4	41.6	31.9		62.4	29.4		283.4	39.3		52.0	18.2
Level of Service	F	D	C		E	C		F	D		D	B
Approach Delay (s)		46.4				36.9			68.8			46.5
Approach LOS		D				D			E			D

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	102.9	Sum of lost time (s)	16.8
Intersection Capacity Utilization	72.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	22
Future Volume (vph)	22
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	23
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

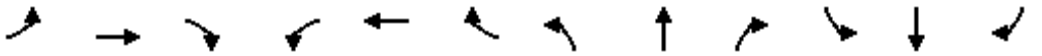
Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑		↱
Traffic Vol, veh/h	1255	2	0	1316	0	45
Future Vol, veh/h	1255	2	0	1316	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1426	2	0	1495	0	51

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	714
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	-	-	0	-	0	371
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	371
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

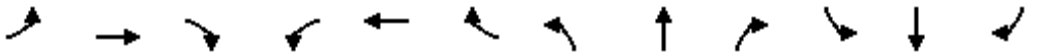
Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	371	-	-	-
HCM Lane V/C Ratio	0.138	-	-	-
HCM Control Delay (s)	16.2	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1183	117	111	994	0	0	0	136	235	41	322
Future Volume (vph)	0	1183	117	111	994	0	0	0	136	235	41	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1845	1547
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1845	1547
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	1300	129	122	1092	0	0	0	149	258	45	354
RTOR Reduction (vph)	0	0	53	0	0	0	0	0	60	0	0	86
Lane Group Flow (vph)	0	1300	76	122	1092	0	0	0	89	258	45	268
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		74.7	74.7	13.6	94.0				30.3	16.4	33.5	33.5
Effective Green, g (s)		74.7	74.7	13.6	94.0				30.3	16.4	33.5	33.5
Actuated g/C Ratio		0.53	0.53	0.10	0.67				0.22	0.12	0.24	0.24
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		1870	836	170	2353				345	398	441	370
v/s Ratio Prot		c0.37		c0.07	0.31				0.06	0.08	0.02	
v/s Ratio Perm			0.05									c0.17
v/c Ratio		0.70	0.09	0.72	0.46				0.26	0.65	0.10	0.72
Uniform Delay, d1		24.2	16.0	61.3	11.0				45.5	59.0	41.5	49.0
Progression Factor		1.00	1.00	1.02	0.92				1.00	1.00	1.00	1.00
Incremental Delay, d2		2.2	0.2	9.4	0.5				0.1	5.4	0.3	9.0
Delay (s)		26.4	16.2	72.1	10.6				45.7	64.4	41.8	58.0
Level of Service		C	B	E	B				D	E	D	E
Approach Delay (s)		25.5			16.8			45.7			59.4	
Approach LOS		C			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	393	989	189	169	771	116	96	288	125	65	323	417
Future Volume (veh/h)	393	989	189	169	771	116	96	288	125	65	323	417
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	418	1052	201	180	820	123	102	306	133	69	344	444
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	258	1785	796	226	1311	197	108	664	296	87	728	571
Arrive On Green	0.19	0.67	0.67	0.13	0.85	0.85	0.04	0.25	0.25	0.05	0.21	0.21
Sat Flow, veh/h	1767	3526	1572	3428	3074	461	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	418	1052	201	180	470	473	102	306	133	69	344	444
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1772	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	20.4	22.6	7.0	7.1	11.8	11.8	4.2	10.3	10.0	5.4	12.0	21.2
Cycle Q Clear(g_c), s	20.4	22.6	7.0	7.1	11.8	11.8	4.2	10.3	10.0	5.4	12.0	21.2
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	258	1785	796	226	752	756	108	664	296	87	728	571
V/C Ratio(X)	1.62	0.59	0.25	0.80	0.63	0.63	0.95	0.46	0.45	0.79	0.47	0.78
Avail Cap(c_a), veh/h	258	1785	796	313	752	756	108	763	340	153	957	751
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	0.90	0.90	0.90	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	15.0	12.4	59.9	6.8	6.8	67.0	46.4	46.3	65.8	48.9	52.5
Incr Delay (d2), s/veh	292.7	1.0	0.5	5.7	3.5	3.5	64.5	0.8	1.6	5.8	0.8	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	29.7	8.0	2.5	3.1	3.2	3.3	2.7	4.4	4.0	2.6	5.4	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	349.1	16.0	13.0	65.6	10.3	10.3	131.5	47.2	48.0	71.7	49.7	57.6
LnGrp LOS	F	B	B	E	B	B	F	D	D	E	D	E
Approach Vol, veh/h		1671			1123			541			857	
Approach Delay, s/veh		99.0			19.1			63.3			55.5	
Approach LOS		F			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	32.5	15.8	78.2	11.0	35.0	27.0	67.0
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 12	30.3	* 13	* 58	* 4.4	38.0	* 20	* 51
Max Q Clear Time (g_c+I1), s	7.4	12.3	9.1	24.6	6.2	23.2	22.4	13.8
Green Ext Time (p_c), s	0.0	3.4	0.1	15.7	0.0	5.7	0.0	11.3

Intersection Summary	
HCM 6th Ctrl Delay	64.1
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	884	0	0	790	227	58
Future Volume (vph)	884	0	0	790	227	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	921	0	0	823	236	60
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	921	0	0	823	236	21
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	41.4			41.4	16.4	16.4
Effective Green, g (s)	41.4			41.4	16.4	16.4
Actuated g/C Ratio	0.59			0.59	0.23	0.23
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2072			2072	410	367
v/s Ratio Prot	c0.26			0.23	c0.13	
v/s Ratio Perm						0.01
v/c Ratio	0.44			0.40	0.58	0.06
Uniform Delay, d1	7.9			7.6	23.7	20.8
Progression Factor	0.90			1.00	1.00	1.00
Incremental Delay, d2	0.6			0.6	3.2	0.1
Delay (s)	7.7			8.2	26.9	20.9
Level of Service	A			A	C	C
Approach Delay (s)	7.7			8.2	25.7	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	10.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	16	35	649	243	55	501	24	19	109	213	23	2
Future Volume (vph)	16	35	649	243	55	501	24	19	109	213	23	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3361		1752	3478			1752	3505	1568	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3361		1752	3478			1752	3505	1568	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	37	690	259	59	533	26	20	116	227	24	2
RTOR Reduction (vph)	0	0	40	0	0	4	0	0	0	0	19	0
Lane Group Flow (vph)	0	54	909	0	59	555	0	0	136	227	5	0
Confl. Peds. (#/hr)							8					
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		3.1	25.7		3.4	25.6			13.5	14.0	14.0	
Effective Green, g (s)		3.1	25.7		3.4	25.6			13.5	14.0	14.0	
Actuated g/C Ratio		0.04	0.37		0.05	0.37			0.20	0.20	0.20	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		78	1250		86	1288			342	710	317	
v/s Ratio Prot		0.03	c0.27		c0.03	0.16			c0.08	0.06		
v/s Ratio Perm											0.00	
v/c Ratio		0.69	0.73		0.69	0.43			0.40	0.32	0.02	
Uniform Delay, d1		32.5	18.7		32.3	16.3			24.3	23.5	22.0	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		23.3	2.1		20.3	0.2			0.8	0.3	0.0	
Delay (s)		55.8	20.8		52.6	16.5			25.0	23.8	22.1	
Level of Service		E	C		D	B			C	C	C	
Approach Delay (s)			22.7			20.0				24.1		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	69.1	Sum of lost time (s)	17.2
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	268	134	35
Future Volume (vph)	268	134	35
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1548
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1548
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	285	143	37
RTOR Reduction (vph)	0	0	32
Lane Group Flow (vph)	287	143	5
Confl. Peds. (#/hr)			1
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	9.2	9.7	9.7
Effective Green, g (s)	9.2	9.7	9.7
Actuated g/C Ratio	0.13	0.14	0.14
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	452	492	217
v/s Ratio Prot	c0.08	0.04	
v/s Ratio Perm			0.00
v/c Ratio	0.63	0.29	0.02
Uniform Delay, d1	28.4	26.6	25.6
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	2.9	0.3	0.0
Delay (s)	31.3	26.9	25.7
Level of Service	C	C	C
Approach Delay (s)		29.5	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	851	56	313	371	0	0	430
Future Volume (vph)	0	0	0	851	56	313	371	0	0	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frpb, ped/bikes				1.00	0.98	1.00	1.00			1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00			1.00
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3471	1520	1736	3471			2733
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3471	1520	1736	3471			2733
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	896	59	329	391	0	0	453
RTOR Reduction (vph)	0	0	0	0	25	0	0	0	0	267
Lane Group Flow (vph)	0	0	0	896	34	329	391	0	0	186
Confl. Peds. (#/hr)					1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				39.8	39.8	17.7	24.8			28.7
Effective Green, g (s)				39.8	39.8	17.7	24.8			28.7
Actuated g/C Ratio				0.57	0.57	0.25	0.35			0.41
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1973	864	438	1229			1120
v/s Ratio Prot				c0.26		c0.19	0.11			0.07
v/s Ratio Perm					0.02					
v/c Ratio				0.45	0.04	0.75	0.32			0.17
Uniform Delay, d1				8.8	6.7	24.1	16.4			13.1
Progression Factor				1.20	2.34	1.00	0.89			1.00
Incremental Delay, d2				0.7	0.1	6.0	0.6			0.2
Delay (s)				11.3	15.6	30.0	15.3			13.3
Level of Service				B	B	C	B			B
Approach Delay (s)	0.0			11.5			22.1		13.3	
Approach LOS	A			B			C		B	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

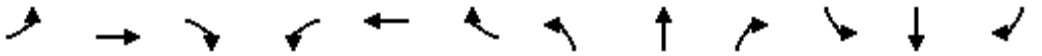
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	57	60	83	78	2
Future Vol, veh/h	5	57	60	83	78	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	62	65	90	85	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	155	0	-	0	182	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	72	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1419	-	-	-	805	941
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	948	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1419	-	-	-	802	941
Mov Cap-2 Maneuver	-	-	-	-	802	-
Stage 1	-	-	-	-	908	-
Stage 2	-	-	-	-	948	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1419	-	-	-	805
HCM Lane V/C Ratio	0.004	-	-	-	0.108
HCM Control Delay (s)	7.5	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	20	301	42	17	89	176	622	42	55	651	119
Future Volume (veh/h)	212	20	301	42	17	89	176	622	42	55	651	119
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	223	21	317	44	18	94	185	655	44	58	685	125
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	273	426	361	57	338	286	234	1725	116	95	1671	1311
Arrive On Green	0.08	0.23	0.23	0.03	0.18	0.18	0.07	0.51	0.51	0.06	0.95	0.95
Sat Flow, veh/h	3428	1856	1572	1767	1856	1570	3428	3353	225	3428	3526	2768
Grp Volume(v), veh/h	223	21	317	44	18	94	185	344	355	58	685	125
Grp Sat Flow(s),veh/h/ln	1714	1856	1572	1767	1856	1570	1714	1763	1815	1714	1763	1384
Q Serve(g_s), s	9.0	1.2	27.2	3.5	1.1	7.3	7.4	16.5	16.5	2.3	2.3	0.4
Cycle Q Clear(g_c), s	9.0	1.2	27.2	3.5	1.1	7.3	7.4	16.5	16.5	2.3	2.3	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	273	426	361	57	338	286	234	907	934	95	1671	1311
V/C Ratio(X)	0.82	0.05	0.88	0.78	0.05	0.33	0.79	0.38	0.38	0.61	0.41	0.10
Avail Cap(c_a), veh/h	387	649	550	124	570	482	328	907	934	142	1671	1311
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	63.4	42.0	52.0	67.3	47.3	49.8	64.2	20.5	20.5	65.4	2.0	1.9
Incr Delay (d2), s/veh	6.1	0.1	15.8	8.2	0.1	1.0	5.5	1.2	1.2	2.3	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.6	12.3	1.7	0.5	3.0	3.4	6.8	7.1	1.0	0.8	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	42.1	67.8	75.5	47.4	50.8	69.7	21.7	21.7	67.7	2.7	2.1
LnGrp LOS	E	D	E	E	D	D	E	C	C	E	A	A
Approach Vol, veh/h		561			156			884			868	
Approach Delay, s/veh		67.5			57.4			31.8			7.0	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	78.4	11.7	39.4	16.1	72.7	18.3	32.8
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 5.8	47.9	* 9.8	* 49	* 13	40.3	* 16	* 43
Max Q Clear Time (g_c+I1), s	4.3	18.5	5.5	29.2	9.4	4.3	11.0	9.3
Green Ext Time (p_c), s	0.0	10.5	0.0	2.7	0.1	13.0	0.2	0.7

Intersection Summary	
HCM 6th Ctrl Delay	32.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	25.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	11	15	48	8	112	15	738	52	169	798	9
Future Vol, veh/h	5	11	15	48	8	112	15	738	52	169	798	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	11	15	49	8	114	15	753	53	172	814	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1574	1999	412	1567	1977	403	823	0	0	806	0	0
Stage 1	1163	1163	-	810	810	-	-	-	-	-	-	-
Stage 2	411	836	-	757	1167	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	73	59	586	74	60	594	796	-	-	808	-	-
Stage 1	205	265	-	338	389	-	-	-	-	-	-	-
Stage 2	586	378	-	364	264	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	42	46	586	49	46	594	796	-	-	808	-	-
Mov Cap-2 Maneuver	42	46	-	49	46	-	-	-	-	-	-	-
Stage 1	201	209	-	332	382	-	-	-	-	-	-	-
Stage 2	454	371	-	264	208	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	70	274.7	0.2	1.8
HCM LOS	F	F		

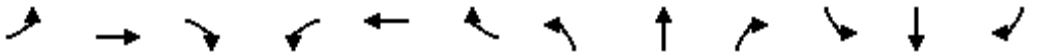
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	796	-	-	45	586	125	808	-	-
HCM Lane V/C Ratio	0.019	-	-	0.363	0.026	1.371	0.213	-	-
HCM Control Delay (s)	9.6	-	-	125	11.3	274.7	10.7	-	-
HCM Lane LOS	A	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.1	11.4	0.8	-	-

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	239	13	0	270	38	30	0	0	13	0	2
Future Vol, veh/h	3	239	13	0	270	38	30	0	0	13	0	2
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	291	16	0	329	46	37	0	0	16	0	2
Number of Lanes	0	2	1	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	3
HCM Control Delay	10	10.2	10.2	9.8
HCM LOS	A	B	B	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	4%	0%	0%	0%	0%	87%
Vol Thru, %	0%	100%	96%	100%	0%	100%	70%	0%
Vol Right, %	0%	0%	0%	0%	100%	0%	30%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	0	83	159	13	180	128	15
LT Vol	30	0	3	0	0	0	0	13
Through Vol	0	0	80	159	0	180	90	0
RT Vol	0	0	0	0	13	0	38	2
Lane Flow Rate	37	0	101	194	16	220	156	18
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.071	0	0.154	0.297	0.021	0.328	0.224	0.035
Departure Headway (Hd)	6.953	6.45	5.516	5.498	4.794	5.386	5.177	6.854
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	518	0	646	649	740	663	688	525
Service Time	4.654	4.151	3.288	3.269	2.566	3.151	2.943	4.555
HCM Lane V/C Ratio	0.071	0	0.156	0.299	0.022	0.332	0.227	0.034
HCM Control Delay	10.2	9.2	9.3	10.6	7.7	10.8	9.4	9.8
HCM Lane LOS	B	N	A	B	A	B	A	A
HCM 95th-tile Q	0.2	0	0.5	1.2	0.1	1.4	0.9	0.1



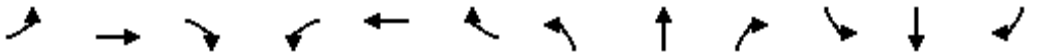
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	234	650	138	169	760	82	58	151	91	31	243	273
Future Volume (veh/h)	234	650	138	169	760	82	58	151	91	31	243	273
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	239	663	141	172	776	84	59	154	93	32	248	279
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	288	2000	892	219	1755	190	97	540	240	41	522	410
Arrive On Green	0.17	1.00	1.00	0.13	1.00	1.00	0.03	0.15	0.15	0.02	0.15	0.15
Sat Flow, veh/h	3428	3526	1572	3428	3208	347	3428	3526	1566	1767	3526	2768
Grp Volume(v), veh/h	239	663	141	172	426	434	59	154	93	32	248	279
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1714	1763	1793	1714	1763	1566	1767	1763	1384
Q Serve(g_s), s	9.3	0.0	0.0	6.7	0.0	0.0	2.3	5.3	7.4	2.5	8.9	13.2
Cycle Q Clear(g_c), s	9.3	0.0	0.0	6.7	0.0	0.0	2.3	5.3	7.4	2.5	8.9	13.2
Prop In Lane	1.00		1.00	1.00		0.19	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	2000	892	219	964	981	97	540	240	41	522	410
V/C Ratio(X)	0.83	0.33	0.16	0.79	0.44	0.44	0.61	0.29	0.39	0.79	0.48	0.68
Avail Cap(c_a), veh/h	482	2000	892	308	964	981	99	899	400	87	971	762
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.89	0.89	0.89	0.92	0.92	0.92	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	0.0	0.0	59.3	0.0	0.0	66.3	51.7	52.6	67.1	53.9	55.7
Incr Delay (d2), s/veh	2.3	0.4	0.4	4.8	1.3	1.3	6.5	0.5	1.6	11.7	1.2	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.1	0.1	2.9	0.4	0.4	1.1	2.4	3.0	1.3	4.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.7	0.4	0.4	64.1	1.3	1.3	72.8	52.2	54.2	78.8	55.0	59.1
LnGrp LOS	E	A	A	E	A	A	E	D	D	E	E	E
Approach Vol, veh/h		1043			1032			306			559	
Approach Delay, s/veh		13.8			11.8			56.8			58.4	
Approach LOS		B			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	27.2	15.4	85.6	10.5	26.5	18.2	82.8
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 6.8	35.2	* 12	* 57	* 4	38.0	* 19	* 50
Max Q Clear Time (g_c+I1), s	4.5	9.4	8.7	2.0	4.3	15.2	11.3	2.0
Green Ext Time (p_c), s	0.0	2.0	0.1	9.7	0.0	4.5	0.3	10.5

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	4	6	38	1	117	5	605	39	98	475	2
Future Volume (veh/h)	2	4	6	38	1	117	5	605	39	98	475	2
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	2	4	6	40	1	124	5	644	41	104	505	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	4	64	96	60	2	199	9	1016	65	128	1331	5
Arrive On Green	0.00	0.10	0.10	0.04	0.13	0.13	0.01	0.32	0.32	0.08	0.39	0.39
Sat Flow, veh/h	1682	637	955	1682	12	1484	1682	3204	204	1682	3429	14
Grp Volume(v), veh/h	2	0	10	40	0	125	5	337	348	104	247	260
Grp Sat Flow(s),veh/h/ln	1682	0	1591	1682	0	1496	1682	1678	1730	1682	1678	1764
Q Serve(g_s), s	0.0	0.0	0.2	1.0	0.0	3.3	0.1	7.2	7.2	2.6	4.4	4.4
Cycle Q Clear(g_c), s	0.0	0.0	0.2	1.0	0.0	3.3	0.1	7.2	7.2	2.6	4.4	4.4
Prop In Lane	1.00		0.60	1.00		0.99	1.00		0.12	1.00		0.01
Lane Grp Cap(c), veh/h	4	0	160	60	0	201	9	532	549	128	651	685
V/C Ratio(X)	0.50	0.00	0.06	0.67	0.00	0.62	0.55	0.63	0.63	0.81	0.38	0.38
Avail Cap(c_a), veh/h	173	0	1303	185	0	1285	173	1286	1325	173	1286	1351
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	17.0	20.0	0.0	17.1	20.8	12.2	12.2	19.1	9.2	9.2
Incr Delay (d2), s/veh	72.7	0.0	0.2	12.2	0.0	3.1	43.2	1.3	1.2	18.6	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.1	0.5	0.0	1.1	0.1	2.0	2.1	1.5	1.1	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.6	0.0	17.2	32.1	0.0	20.3	64.0	13.5	13.4	37.7	9.6	9.5
LnGrp LOS	F	A	B	C	A	C	E	B	B	D	A	A
Approach Vol, veh/h		12			165			690			611	
Approach Delay, s/veh		29.9			23.2			13.8			14.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	18.6	5.7	10.2	4.4	21.6	4.3	11.6
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.6	34.3	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	4.6	9.2	3.0	2.2	2.1	6.4	2.0	5.3
Green Ext Time (p_c), s	0.0	3.9	0.0	0.0	0.0	2.8	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

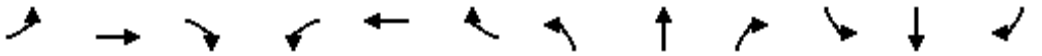
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	22.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	539	47	0	581	26	32	0	0	42	0	2
Future Vol, veh/h	3	539	47	0	581	26	32	0	0	42	0	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	3	613	53	0	660	30	36	0	0	48	0	2
Number of Lanes	0	2	1	0	2	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	3
HCM Control Delay	21	24.5	12.7	12.9
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	2%	0%	0%	0%	0%	95%
Vol Thru, %	0%	100%	98%	100%	0%	100%	88%	0%
Vol Right, %	0%	0%	0%	0%	100%	0%	12%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	32	0	183	359	47	387	220	44
LT Vol	32	0	3	0	0	0	0	42
Through Vol	0	0	180	359	0	387	194	0
RT Vol	0	0	0	0	47	0	26	2
Lane Flow Rate	36	0	208	408	53	440	250	50
Geometry Grp	8	8	8	8	8	8	8	8
Degree of Util (X)	0.092	0	0.38	0.746	0.087	0.797	0.446	0.124
Departure Headway (Hd)	9.081	8.569	6.589	6.581	5.873	6.517	6.433	8.957
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	397	0	544	547	606	555	557	403
Service Time	6.783	6.271	4.362	4.353	3.645	4.287	4.204	6.659
HCM Lane V/C Ratio	0.091	0	0.382	0.746	0.087	0.793	0.449	0.124
HCM Control Delay	12.7	11.3	13.4	26.4	9.2	30.3	14.3	12.9
HCM Lane LOS	B	N	B	D	A	D	B	B
HCM 95th-tile Q	0.3	0	1.8	6.4	0.3	7.6	2.3	0.4



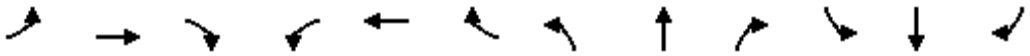
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	393	989	189	169	771	116	96	288	125	65	323	417
Future Volume (veh/h)	393	989	189	169	771	116	96	288	125	65	323	417
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	418	1052	201	180	820	123	102	306	133	69	344	444
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	1102	1950	870	226	899	135	108	434	194	120	550	432
Arrive On Green	0.11	0.18	0.18	0.13	0.58	0.58	0.01	0.04	0.04	0.07	0.16	0.16
Sat Flow, veh/h	3428	3526	1572	3428	3074	461	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	418	1052	201	180	470	473	102	306	133	69	344	444
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1714	1763	1772	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	15.9	37.9	15.3	7.1	33.2	33.2	4.2	12.0	9.6	5.3	12.8	10.9
Cycle Q Clear(g_c), s	15.9	37.9	15.3	7.1	33.2	33.2	4.2	12.0	9.6	5.3	12.8	10.9
Prop In Lane	1.00		1.00	1.00		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1102	1950	870	226	516	518	108	434	194	120	550	432
V/C Ratio(X)	0.38	0.54	0.23	0.80	0.91	0.91	0.95	0.70	0.69	0.58	0.63	1.03
Avail Cap(c_a), veh/h	1102	1950	870	313	574	577	108	763	340	153	957	751
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	0.90	0.90	0.90	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	41.1	31.8	59.9	27.5	27.5	69.2	64.6	43.5	63.3	55.3	14.9
Incr Delay (d2), s/veh	0.1	0.8	0.4	5.7	21.2	21.1	64.5	3.2	6.4	1.6	2.0	37.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	18.2	6.6	3.1	13.5	13.5	2.8	5.8	4.4	2.4	5.8	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.6	41.8	32.2	65.6	48.7	48.6	133.7	67.8	49.9	64.9	57.3	52.6
LnGrp LOS	D	D	C	E	D	D	F	E	D	E	E	F
Approach Vol, veh/h		1671			1123			541			857	
Approach Delay, s/veh		42.6			51.3			75.8			55.5	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.1	23.3	15.8	84.7	11.0	28.4	52.3	48.2
Change Period (Y+Rc), s	6.6	* 6.1	* 6.6	* 7.3	* 6.6	* 6.6	* 7.3	* 7.3
Max Green Setting (Gmax), s	12.1	* 30	* 13	* 58	* 4.4	* 38	* 25	* 46
Max Q Clear Time (g_c+I1), s	7.3	14.0	9.1	39.9	6.2	14.8	17.9	35.2
Green Ext Time (p_c), s	0.0	3.2	0.1	11.0	0.0	7.1	0.6	5.7

Intersection Summary	
HCM 6th Ctrl Delay	51.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	11	15	48	8	112	15	738	52	169	798	9
Future Volume (veh/h)	5	11	15	48	8	112	15	738	52	169	798	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	5	11	15	49	8	114	15	753	53	172	814	9
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	10	62	84	72	13	181	27	1133	80	169	1498	17
Arrive On Green	0.01	0.09	0.09	0.04	0.12	0.12	0.02	0.34	0.34	0.10	0.42	0.42
Sat Flow, veh/h	1767	711	970	1767	104	1484	1767	3341	235	1767	3572	39
Grp Volume(v), veh/h	5	0	26	49	0	122	15	397	409	172	402	421
Grp Sat Flow(s),veh/h/ln	1767	0	1681	1767	0	1588	1767	1763	1813	1767	1763	1848
Q Serve(g_s), s	0.1	0.0	0.6	1.2	0.0	3.3	0.4	8.6	8.7	4.3	7.7	7.7
Cycle Q Clear(g_c), s	0.1	0.0	0.6	1.2	0.0	3.3	0.4	8.6	8.7	4.3	7.7	7.7
Prop In Lane	1.00		0.58	1.00		0.93	1.00		0.13	1.00		0.02
Lane Grp Cap(c), veh/h	10	0	145	72	0	194	27	598	615	169	739	775
V/C Ratio(X)	0.53	0.00	0.18	0.68	0.00	0.63	0.56	0.66	0.66	1.02	0.54	0.54
Avail Cap(c_a), veh/h	169	0	1271	193	0	1272	169	1258	1294	169	1258	1319
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	19.1	21.3	0.0	18.8	22.0	12.7	12.7	20.3	9.8	9.8
Incr Delay (d2), s/veh	38.3	0.0	0.6	10.7	0.0	3.4	16.9	1.3	1.2	74.0	0.6	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.2	0.7	0.0	1.2	0.3	2.6	2.7	4.9	2.1	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.0	19.6	32.0	0.0	22.1	38.9	14.0	13.9	94.3	10.4	10.4
LnGrp LOS	E	A	B	C	A	C	D	B	B	F	B	B
Approach Vol, veh/h		31			171			821			995	
Approach Delay, s/veh		26.3			25.0			14.4			24.9	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	20.5	6.0	9.9	4.9	24.2	4.4	11.5
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.9	34.0	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	6.3	10.7	3.2	2.6	2.4	9.7	2.1	5.3
Green Ext Time (p_c), s	0.0	4.6	0.0	0.1	0.0	4.7	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	20.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	SB	SB	SE	SE	SE	SE	NW	NW	NW
Directions Served	L	T	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	191	249	314	75	23	44	38	72	26	61	50
Average Queue (ft)	64	73	130	22	2	14	4	22	2	8	5
95th Queue (ft)	131	145	221	72	9	37	21	56	11	32	24
Link Distance (ft)		1215	1312			2556	2556			1128	1128
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	140			50	200			70	75		
Storage Blk Time (%)	1	5	37	0				0		0	
Queuing Penalty (veh)	2	9	5	1				0		0	

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	24	50	30
Average Queue (ft)	2	16	11
95th Queue (ft)	14	39	33
Link Distance (ft)	1932	2737	2634
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Future N-S Road & Floral Avenue

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	LT	T	R	LT	TR	L	LTR
Maximum Queue (ft)	55	79	31	104	73	26	31
Average Queue (ft)	33	38	8	47	35	13	14
95th Queue (ft)	46	63	28	77	59	34	39
Link Distance (ft)	1190	1190		625	625		1303
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			250			250	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	TR	L	TR	L	TR
Maximum Queue (ft)	56	160	131	31	194	377	332	47	169	199	279
Average Queue (ft)	17	68	66	13	168	179	125	19	60	118	39
95th Queue (ft)	48	121	109	37	234	398	247	47	127	197	158
Link Distance (ft)		625	625			374	374		345		716
Upstream Blk Time (%)						1					
Queuing Penalty (veh)						3					
Storage Bay Dist (ft)	100			100	340			100		100	
Storage Blk Time (%)		3	3		26	0			3	22	0
Queuing Penalty (veh)		1	1		35	0			1	6	0

Intersection: 5: Eastern Driveway & Floral Avenue

Movement	WB	NB
Directions Served	T	R
Maximum Queue (ft)	96	78
Average Queue (ft)	6	38
95th Queue (ft)	40	65
Link Distance (ft)	234	375
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	210	234	150	93	112	118	42	136	115	46	90
Average Queue (ft)	76	88	22	43	45	39	18	48	62	11	50
95th Queue (ft)	142	167	83	87	93	91	34	102	107	34	81
Link Distance (ft)	234	234			513	513	219			1827	
Upstream Blk Time (%)		0									
Queuing Penalty (veh)		0									
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		5									
Queuing Penalty (veh)		2									

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	TR	L	L	T
Maximum Queue (ft)	225	250	342	341	120	156	250	365	407	64	87	267
Average Queue (ft)	150	120	171	165	51	76	104	215	210	23	28	82
95th Queue (ft)	236	272	313	276	138	138	249	335	346	55	62	178
Link Distance (ft)			513	513				471	471			575
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200	200			60	150	150			170	170	
Storage Blk Time (%)	8	6	3	32		2		20				3
Queuing Penalty (veh)	26	19	6	45		8		34				2

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R	R
Maximum Queue (ft)	200	130	96	180	140	159	149
Average Queue (ft)	18	32	39	108	79	65	49
95th Queue (ft)	83	71	83	161	136	110	87
Link Distance (ft)	575			299	299		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		80	100			100	100
Storage Blk Time (%)		0	1	18	7	2	
Queuing Penalty (veh)		0	1	5	20	3	

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	R
Maximum Queue (ft)	166	188	221	234	290	70
Average Queue (ft)	48	73	80	70	130	45
95th Queue (ft)	122	153	175	151	221	89
Link Distance (ft)	471	471	556	556	1193	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						40
Storage Blk Time (%)					45	1
Queuing Penalty (veh)					18	1

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	26	198	232	150	174	143	144	78	71	63	69	59
Average Queue (ft)	2	60	89	49	67	51	25	25	27	16	22	20
95th Queue (ft)	11	154	187	116	142	129	85	58	59	44	51	46
Link Distance (ft)		556	556		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)		5		2	3		0		1			
Queuing Penalty (veh)		1		4	2		0		0			

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	50
Average Queue (ft)	24
95th Queue (ft)	51
Link Distance (ft)	2910
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	213	245	194	229	131	199	185
Average Queue (ft)	68	68	124	73	59	99	58
95th Queue (ft)	163	157	210	182	108	165	128
Link Distance (ft)	762	762		575	575	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			26	5		1	0
Queuing Penalty (veh)			40	12		1	0

Intersection: 11: Stillman Street & Southern Driveway

Movement	SB
Directions Served	LR
Maximum Queue (ft)	77
Average Queue (ft)	35
95th Queue (ft)	60
Link Distance (ft)	454
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	95	104	56	78	52	70	77	113	98	274	298	98
Average Queue (ft)	35	46	15	25	16	15	26	51	10	125	144	41
95th Queue (ft)	89	94	42	51	44	51	63	92	47	248	276	85
Link Distance (ft)			307			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)	0	6	0									
Queuing Penalty (veh)	1	7	0									

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	48	301	371	54	26
Average Queue (ft)	5	110	134	22	2
95th Queue (ft)	27	223	283	49	15
Link Distance (ft)		762	762		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	320			320	320
Storage Blk Time (%)		0	1		
Queuing Penalty (veh)		0	1		

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	23	72	92	91	31	198	184	183	243	241
Average Queue (ft)	1	7	30	41	5	84	87	91	26	46
95th Queue (ft)	8	34	72	79	22	153	170	167	106	128
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)									0	
Queuing Penalty (veh)									0	

Network Summary

Network wide Queuing Penalty: 323

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	NB	SB	SB	SE	SE	SE	SE	NW	NW	NW
Directions Served	L	T	R	LT	R	UL	T	T	R	UL	T	T
Maximum Queue (ft)	205	445	120	439	74	48	128	120	95	10	3	32
Average Queue (ft)	94	186	16	228	16	9	34	34	45	1	0	3
95th Queue (ft)	201	356	83	383	61	28	75	84	86	6	2	16
Link Distance (ft)		1215		1312			2556	2556			1128	1128
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	140		80		50	200			70	75		
Storage Blk Time (%)	1	18		58	0			2	3			
Queuing Penalty (veh)	3	45		5	0			5	3			

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NW
Directions Served	R
Maximum Queue (ft)	22
Average Queue (ft)	1
95th Queue (ft)	9
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	120
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	WB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	75	61	29
Average Queue (ft)	16	35	9
95th Queue (ft)	50	53	30
Link Distance (ft)	1932	2737	2634
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Future N-S Road & Floral Avenue

Movement	EB	EB	EB	WB	WB	NB	SB
Directions Served	LT	T	R	LT	TR	L	LTR
Maximum Queue (ft)	101	68	100	223	182	26	31
Average Queue (ft)	56	48	31	126	76	19	22
95th Queue (ft)	82	67	63	198	157	36	45
Link Distance (ft)	1190	1190		625	625		1303
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			250			250	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	TR	L	TR	L	TR
Maximum Queue (ft)	190	228	249	190	194	430	355	47	132	200	380
Average Queue (ft)	38	141	136	20	163	217	190	11	58	160	156
95th Queue (ft)	94	207	210	78	223	389	327	35	103	236	369
Link Distance (ft)		625	625			374	374		345		716
Upstream Blk Time (%)						1	0				
Queuing Penalty (veh)						5	0				
Storage Bay Dist (ft)	100			100	340			100		100	
Storage Blk Time (%)		29	23		32	14			1	35	0
Queuing Penalty (veh)		9	5		92	41			0	29	1

Intersection: 5: Eastern Driveway & Floral Avenue

Movement	EB	EB	WB	NB
Directions Served	T	TR	T	R
Maximum Queue (ft)	287	349	101	71
Average Queue (ft)	71	79	7	25
95th Queue (ft)	228	250	47	55
Link Distance (ft)	374	374	234	375
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	T	R
Maximum Queue (ft)	265	283	150	298	332	335	113	180	224	89	205
Average Queue (ft)	193	200	63	94	137	125	46	105	127	33	121
95th Queue (ft)	304	313	174	180	286	283	92	167	200	79	198
Link Distance (ft)	234	234			513	513	219			1827	
Upstream Blk Time (%)	11	12									
Queuing Penalty (veh)	71	80									
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		29			4						
Queuing Penalty (veh)		34			4						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	TR	L	L	T
Maximum Queue (ft)	225	250	534	559	120	182	250	475	487	93	280	342
Average Queue (ft)	219	243	450	461	70	92	118	276	285	45	66	192
95th Queue (ft)	236	285	612	629	159	165	275	444	439	85	186	308
Link Distance (ft)			513	513				471	471			575
Upstream Blk Time (%)			8	7				1	1			
Queuing Penalty (veh)			62	57				4	3			
Storage Bay Dist (ft)	200	200			60	150	150			170	170	
Storage Blk Time (%)	50	22	23	46	1	2		28				24
Queuing Penalty (veh)	246	108	89	88	6	8		48				23

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	R	L	T	T	R	R
Maximum Queue (ft)	308	130	200	218	156	140	146
Average Queue (ft)	118	62	68	155	86	74	61
95th Queue (ft)	277	123	145	220	131	124	108
Link Distance (ft)	575			299	299		
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		80	100			100	100
Storage Blk Time (%)	5	5	5	33	8	3	0
Queuing Penalty (veh)	6	7	8	22	33	6	0

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	R
Maximum Queue (ft)	336	311	280	205	267	70
Average Queue (ft)	69	99	98	88	162	51
95th Queue (ft)	200	219	188	159	271	90
Link Distance (ft)	471	471	556	556	1193	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						40
Storage Blk Time (%)					51	1
Queuing Penalty (veh)					30	2

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	57	334	342	57	148	146	155	102	112	185	249	276
Average Queue (ft)	22	159	193	25	68	61	56	44	52	74	102	42
95th Queue (ft)	53	313	338	55	116	119	108	91	99	163	185	130
Link Distance (ft)		556	556		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)		13			2		0		6	8	9	
Queuing Penalty (veh)		7			1		0		1	5	6	

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW
Directions Served	T
Maximum Queue (ft)	90
Average Queue (ft)	44
95th Queue (ft)	82
Link Distance (ft)	2910
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	7
Queuing Penalty (veh)	2

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	210	242	195	362	256	153	115
Average Queue (ft)	74	93	143	127	58	83	40
95th Queue (ft)	183	184	227	321	138	142	86
Link Distance (ft)	762	762		575	575	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			29	2			
Queuing Penalty (veh)			54	7			

Intersection: 11: Stillman Street & Southern Driveway

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	31	66
Average Queue (ft)	1	31
95th Queue (ft)	10	54
Link Distance (ft)	798	454
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	100	124	296	220	77	73	96	290	274	356	364	73
Average Queue (ft)	62	94	117	117	41	14	37	129	69	135	155	42
95th Queue (ft)	122	147	273	221	82	45	76	233	181	272	295	76
Link Distance (ft)			307			356	356			673	673	
Upstream Blk Time (%)			0									
Queuing Penalty (veh)			0									
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)	4	37	0	6				0		1		
Queuing Penalty (veh)	13	119	0	13				0		1		

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	56	223	248	74	42
Average Queue (ft)	9	133	134	25	3
95th Queue (ft)	37	211	236	56	18
Link Distance (ft)		762	762		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	320			320	320
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	25	30	133	112	74	196	213	243	286	308
Average Queue (ft)	3	13	43	41	13	114	108	130	74	100
95th Queue (ft)	16	33	91	78	44	185	187	207	189	204
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)								0	1	
Queuing Penalty (veh)								0	1	

Network Summary

Network wide Queuing Penalty: 1519

Appendix H: Cumulative Year 2046 No Project Traffic Conditions

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	294	202	19	49	369	30	6	236	332	2	48	478
Future Volume (vph)	294	202	19	49	369	30	6	236	332	2	48	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538		1799	1538	1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538		1799	1538	1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	220	21	53	401	33	7	257	361	2	52	520
RTOR Reduction (vph)	0	0	16	0	0	23	0	0	292	0	0	0
Lane Group Flow (vph)	320	220	5	0	454	10	7	257	69	0	54	520
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	Prot	NA
Protected Phases	2	2		6	6		7	4		3	3	8
Permitted Phases			2			6			4			
Actuated Green, G (s)	21.7	21.7	21.7		24.6	24.6	0.6	16.0	16.0		3.7	19.1
Effective Green, g (s)	21.7	21.7	21.7		24.6	24.6	0.6	16.0	16.0		3.7	19.1
Actuated g/C Ratio	0.26	0.26	0.26		0.29	0.29	0.01	0.19	0.19		0.04	0.23
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	444	468	397		527	450	12	655	293		75	782
v/s Ratio Prot	c0.19	0.12			c0.25		0.00	0.07			c0.03	c0.15
v/s Ratio Perm			0.00			0.01			0.04			
v/c Ratio	0.72	0.47	0.01		0.86	0.02	0.58	0.39	0.23		0.72	0.66
Uniform Delay, d1	28.3	26.2	23.1		28.0	21.1	41.5	29.7	28.8		39.6	29.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.7	0.7	0.0		13.5	0.0	56.2	0.4	0.4		28.0	2.1
Delay (s)	34.0	27.0	23.2		41.6	21.1	97.7	30.1	29.2		67.6	31.6
Level of Service	C	C	C		D	C	F	C	C		E	C
Approach Delay (s)		30.9			40.2			30.3				34.4
Approach LOS		C			D			C				C

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	83.9	Sum of lost time (s)	17.9
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	38
Future Volume (vph)	38
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	41
RTOR Reduction (vph)	32
Lane Group Flow (vph)	9
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	19.1
Effective Green, g (s)	19.1
Actuated g/C Ratio	0.23
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	350
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.03
Uniform Delay, d1	25.2
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	25.2
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

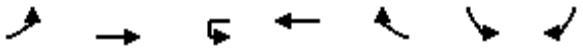
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	14	156	4	13	127	14	1	6	16	16	9	0
Future Vol, veh/h	14	156	4	13	127	14	1	6	16	16	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	170	4	14	138	15	1	7	17	17	10	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	153	0	0	174	0	0	381	383	172	388	378	146
Stage 1	-	-	-	-	-	-	202	202	-	174	174	-
Stage 2	-	-	-	-	-	-	179	181	-	214	204	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1421	-	-	1397	-	-	575	549	869	569	552	898
Stage 1	-	-	-	-	-	-	798	732	-	825	753	-
Stage 2	-	-	-	-	-	-	820	748	-	786	731	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1421	-	-	1397	-	-	557	536	869	543	539	898
Mov Cap-2 Maneuver	-	-	-	-	-	-	557	536	-	543	539	-
Stage 1	-	-	-	-	-	-	788	723	-	815	745	-
Stage 2	-	-	-	-	-	-	800	740	-	754	722	-

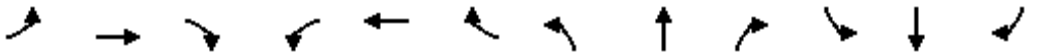
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.6	10.1	12
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	732	1421	-	-	1397	-	-	542
HCM Lane V/C Ratio	0.034	0.011	-	-	0.01	-	-	0.05
HCM Control Delay (s)	10.1	7.6	0	-	7.6	0	-	12
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2



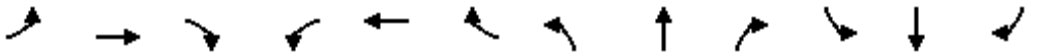
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	12	430	147	619	252	199	6
Future Volume (vph)	12	430	147	619	252	199	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1752	3332		1752	1568
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1752	3332		1752	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	467	160	673	274	216	7
RTOR Reduction (vph)	0	0	0	64	0	0	6
Lane Group Flow (vph)	13	467	160	883	0	216	1
Confl. Peds. (#/hr)					1		
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	0.6	17.6	7.1	24.1		8.3	8.3
Effective Green, g (s)	0.6	17.6	7.1	24.1		8.3	8.3
Actuated g/C Ratio	0.01	0.39	0.16	0.53		0.18	0.18
Clearance Time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	23	1352	272	1760		318	285
v/s Ratio Prot	0.01	0.13	c0.09	c0.26		c0.12	
v/s Ratio Perm							0.00
v/c Ratio	0.57	0.35	0.59	0.50		0.68	0.00
Uniform Delay, d1	22.4	9.9	17.9	6.9		17.4	15.3
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	28.1	0.2	3.2	0.2		5.7	0.0
Delay (s)	50.5	10.1	21.1	7.1		23.1	15.3
Level of Service	D	B	C	A		C	B
Approach Delay (s)		11.2		9.1		22.8	
Approach LOS		B		A		C	

Intersection Summary			
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	45.6	Sum of lost time (s)	12.6
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	685	49	54	810	0	0	0	51	185	23	200
Future Volume (vph)	0	685	49	54	810	0	0	0	51	185	23	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1827	1553
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1827	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	737	53	58	871	0	0	0	55	199	25	215
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	44	0	0	105
Lane Group Flow (vph)	0	737	22	58	871	0	0	0	11	199	25	110
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		28.8	28.8	2.6	37.1				14.0	8.6	20.4	20.4
Effective Green, g (s)		28.8	28.8	2.6	37.1				14.0	8.6	20.4	20.4
Actuated g/C Ratio		0.41	0.41	0.04	0.53				0.20	0.12	0.29	0.29
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		1428	638	64	1839				316	413	532	452
v/s Ratio Prot		c0.21		0.03	c0.25				0.01	c0.06	0.01	
v/s Ratio Perm			0.01									c0.07
v/c Ratio		0.52	0.03	0.91	0.47				0.03	0.48	0.05	0.24
Uniform Delay, d1		15.4	12.3	33.6	10.3				22.6	28.6	17.8	18.9
Progression Factor		1.00	1.00	1.47	1.01				1.00	1.00	1.00	1.00
Incremental Delay, d2		1.3	0.1	69.0	0.7				0.0	2.2	0.1	0.7
Delay (s)		16.7	12.4	118.2	11.1				22.6	30.8	17.9	19.6
Level of Service		B	B	F	B				C	C	B	B
Approach Delay (s)		16.4			17.8			22.6			24.6	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	607	204	229	746	145	158	261	92	53	383	304
Future Volume (veh/h)	230	607	204	229	746	145	158	261	92	53	383	304
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	235	619	208	234	761	148	161	266	94	54	391	310
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	232	1802	804	280	1358	264	169	628	279	69	592	465
Arrive On Green	0.26	1.00	1.00	0.16	0.92	0.92	0.10	0.36	0.36	0.04	0.17	0.17
Sat Flow, veh/h	1767	3526	1572	3428	2943	572	3428	3526	1567	1767	3526	2768
Grp Volume(v), veh/h	235	619	208	234	456	453	161	266	94	54	391	310
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1752	1714	1763	1567	1767	1763	1384
Q Serve(g_s), s	18.4	0.0	0.0	9.3	5.8	5.8	6.5	8.0	6.1	4.2	14.5	14.7
Cycle Q Clear(g_c), s	18.4	0.0	0.0	9.3	5.8	5.8	6.5	8.0	6.1	4.2	14.5	14.7
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	232	1802	804	280	813	808	169	628	279	69	592	465
V/C Ratio(X)	1.01	0.34	0.26	0.84	0.56	0.56	0.95	0.42	0.34	0.78	0.66	0.67
Avail Cap(c_a), veh/h	232	1802	804	384	813	808	169	881	392	125	957	751
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.81	0.81	0.81	0.82	0.82	0.82	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	0.0	0.0	57.6	3.1	3.1	62.9	39.6	39.0	66.7	54.5	54.6
Incr Delay (d2), s/veh	58.8	0.5	0.7	6.8	2.3	2.3	48.8	0.6	1.0	6.9	2.2	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.0	0.1	0.2	4.0	1.7	1.7	3.8	3.2	2.3	2.0	6.6	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	110.4	0.5	0.7	64.4	5.4	5.4	111.8	40.3	40.0	73.6	56.7	57.4
LnGrp LOS	F	A	A	E	A	A	F	D	D	E	E	E
Approach Vol, veh/h		1062			1143			521			755	
Approach Delay, s/veh		24.8			17.5			62.3			58.2	
Approach LOS		C			B			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	31.0	18.0	78.9	13.5	29.6	25.0	71.9
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 9.9	35.0	* 16	* 53	* 6.9	38.0	* 18	* 50
Max Q Clear Time (g_c+I1), s	6.2	10.0	11.3	2.0	8.5	16.7	20.4	7.8
Green Ext Time (p_c), s	0.0	3.1	0.2	9.5	0.0	6.2	0.0	11.2

Intersection Summary	
HCM 6th Ctrl Delay	35.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	550	0	0	775	373	77
Future Volume (vph)	550	0	0	775	373	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	598	0	0	842	405	84
RTOR Reduction (vph)	0	0	0	0	0	32
Lane Group Flow (vph)	598	0	0	842	405	52
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	35.0			35.0	22.8	22.8
Effective Green, g (s)	35.0			35.0	22.8	22.8
Actuated g/C Ratio	0.50			0.50	0.33	0.33
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	1752			1752	570	510
v/s Ratio Prot	0.17			c0.24	c0.23	
v/s Ratio Perm						0.03
v/c Ratio	0.34			0.48	0.71	0.10
Uniform Delay, d1	10.6			11.5	20.7	16.5
Progression Factor	1.15			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.9	5.2	0.2
Delay (s)	12.7			12.5	25.9	16.7
Level of Service	B			B	C	B
Approach Delay (s)	12.7			12.5	24.3	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	4	25	406	104	78	609	78	4	112	210	10	4
Future Volume (vph)	4	25	406	104	78	609	78	4	112	210	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.97		1.00	0.98			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3398		1752	3440			1752	3505	1545	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3398		1752	3440			1752	3505	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	27	441	113	85	662	85	4	122	228	11	4
RTOR Reduction (vph)	0	0	26	0	0	11	0	0	0	0	8	0
Lane Group Flow (vph)	0	31	528	0	85	736	0	0	126	228	3	0
Confl. Peds. (#/hr)							4				4	
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		1.3	22.0		5.1	25.4			7.3	18.4	18.4	
Effective Green, g (s)		1.3	22.0		5.1	25.4			7.3	18.4	18.4	
Actuated g/C Ratio		0.02	0.33		0.08	0.38			0.11	0.27	0.27	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		33	1105		132	1292			189	954	420	
v/s Ratio Prot		0.02	0.16		c0.05	c0.21			c0.07	0.07		
v/s Ratio Perm											0.00	
v/c Ratio		0.94	0.48		0.64	0.57			0.67	0.24	0.01	
Uniform Delay, d1		33.1	18.2		30.4	16.8			29.0	19.1	17.9	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		130.1	0.3		10.3	0.6			8.6	0.1	0.0	
Delay (s)		163.2	18.5		40.7	17.3			37.6	19.3	17.9	
Level of Service		F	B		D	B			D	B	B	
Approach Delay (s)			26.2			19.7				25.5		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	67.6	Sum of lost time (s)	17.2
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



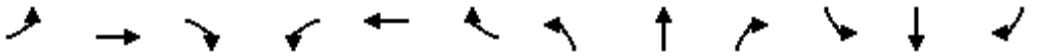
Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	127	441	25
Future Volume (vph)	127	441	25
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1568
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	138	479	27
RTOR Reduction (vph)	0	0	20
Lane Group Flow (vph)	142	479	7
Confl. Peds. (#/hr)			
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	5.3	16.4	16.4
Effective Green, g (s)	5.3	16.4	16.4
Actuated g/C Ratio	0.08	0.24	0.24
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	266	850	380
v/s Ratio Prot	0.04	c0.14	
v/s Ratio Perm			0.00
v/c Ratio	0.53	0.56	0.02
Uniform Delay, d1	30.0	22.5	19.5
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	2.1	0.9	0.0
Delay (s)	32.0	23.3	19.5
Level of Service	C	C	B
Approach Delay (s)		25.1	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	903	43	355	416	0	0	423
Future Volume (vph)	0	0	0	903	43	355	416	0	0	423
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3282	1468	1641	3282			2584
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3282	1468	1641	3282			2584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	951	45	374	438	0	0	445
RTOR Reduction (vph)	0	0	0	0	21	0	0	0	0	252
Lane Group Flow (vph)	0	0	0	951	24	374	438	0	0	193
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				37.1	37.1	20.4	23.2			30.3
Effective Green, g (s)				37.1	37.1	20.4	23.2			30.3
Actuated g/C Ratio				0.53	0.53	0.29	0.33			0.43
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1739	778	478	1087			1118
v/s Ratio Prot				c0.29		c0.23	0.13			0.07
v/s Ratio Perm					0.02					
v/c Ratio				0.55	0.03	0.78	0.40			0.17
Uniform Delay, d1				10.9	7.9	22.8	18.1			12.2
Progression Factor				1.15	1.21	0.80	0.75			1.00
Incremental Delay, d2				1.1	0.1	7.0	1.0			0.2
Delay (s)				13.6	9.6	25.2	14.6			12.4
Level of Service				B	A	C	B			B
Approach Delay (s)	0.0			13.5			19.5		12.4	
Approach LOS	A			B			B		B	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	55.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	9	35	20	5	45	43	891	57	68	698	74
Future Volume (veh/h)	23	9	35	20	5	45	43	891	57	68	698	74
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	23	9	36	20	5	46	44	909	58	69	712	76
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	56	84	71	26	81	69	77	2289	146	107	2429	1907
Arrive On Green	0.02	0.05	0.05	0.02	0.05	0.05	0.02	0.71	0.71	0.06	1.00	1.00
Sat Flow, veh/h	3291	1781	1510	1697	1781	1510	3291	3231	206	3291	3385	2657
Grp Volume(v), veh/h	23	9	36	20	5	46	44	476	491	69	712	76
Grp Sat Flow(s),veh/h/ln	1646	1781	1510	1697	1781	1510	1646	1692	1744	1646	1692	1329
Q Serve(g_s), s	1.0	0.7	3.3	1.6	0.4	4.2	1.9	16.0	16.0	2.9	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.7	3.3	1.6	0.4	4.2	1.9	16.0	16.0	2.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	56	84	71	26	81	69	77	1199	1236	107	2429	1907
V/C Ratio(X)	0.41	0.11	0.51	0.76	0.06	0.67	0.57	0.40	0.40	0.65	0.29	0.04
Avail Cap(c_a), veh/h	96	548	465	75	575	487	197	1199	1236	174	2429	1907
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	68.1	63.9	65.1	68.7	63.9	65.8	67.7	8.3	8.3	64.7	0.0	0.0
Incr Delay (d2), s/veh	1.8	1.3	12.0	15.5	0.5	15.7	2.5	1.0	1.0	2.3	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.3	1.5	0.8	0.2	1.9	0.8	5.5	5.6	1.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	65.1	77.1	84.2	64.4	81.5	70.1	9.3	9.2	67.0	0.3	0.0
LnGrp LOS	E	E	E	F	E	F	E	A	A	E	A	A
Approach Vol, veh/h		68			71			1011			857	
Approach Delay, s/veh		73.1			81.1			11.9			5.6	
Approach LOS		E			F			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	105.6	9.4	13.9	9.9	106.9	9.6	13.7
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 7.4	55.8	* 6.2	* 43	* 8.4	54.8	* 4.1	* 45
Max Q Clear Time (g_c+I1), s	4.9	18.0	3.6	5.3	3.9	2.0	3.0	6.2
Green Ext Time (p_c), s	0.0	17.6	0.0	0.3	0.0	14.6	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	13.7
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	10	23	44	2	125	19	771	43	90	562	35
Future Vol, veh/h	41	10	23	44	2	125	19	771	43	90	562	35
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	44	11	24	47	2	133	20	820	46	96	598	37

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1262	1716	319	1380	1711	434	636	0	0	866	0	0
Stage 1	810	810	-	883	883	-	-	-	-	-	-	-
Stage 2	452	906	-	497	828	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.68	6.68	7.08	4.28	-	-	4.28	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	119	83	657	97	83	551	897	-	-	730	-	-
Stage 1	325	375	-	293	346	-	-	-	-	-	-	-
Stage 2	538	338	-	506	368	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	78	70	657	73	70	551	896	-	-	730	-	-
Mov Cap-2 Maneuver	78	70	-	73	70	-	-	-	-	-	-	-
Stage 1	318	325	-	287	338	-	-	-	-	-	-	-
Stage 2	396	331	-	409	319	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	90.9	92.2	0.2	1.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	896	-	-	76	657	199	730	-	-
HCM Lane V/C Ratio	0.023	-	-	0.714	0.037	0.914	0.131	-	-
HCM Control Delay (s)	9.1	-	-	127.1	10.7	92.2	10.7	-	-
HCM Lane LOS	A	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.4	0.1	7.3	0.5	-	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	344	585	47	55	521	8	1	33	496	438	3	23
Future Volume (vph)	344	585	47	55	521	8	1	33	496	438	3	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00		1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00		1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548		1836	1568		1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00		1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548		1836	1568		1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	370	629	51	59	560	9	1	35	533	471	3	25
RTOR Reduction (vph)	0	0	33	0	0	6	0	0	0	204	0	0
Lane Group Flow (vph)	370	629	18	0	619	3	0	36	533	267	0	28
Confl. Peds. (#/hr)			1	1								
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	2	2		6	6		7	7	4		3	3
Permitted Phases			2			6				4		
Actuated Green, G (s)	38.7	38.7	38.7		33.1	33.1		2.7	17.9	17.9		2.4
Effective Green, g (s)	38.7	38.7	38.7		33.1	33.1		2.7	17.9	17.9		2.4
Actuated g/C Ratio	0.35	0.35	0.35		0.30	0.30		0.02	0.16	0.16		0.02
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	616	649	544		552	471		43	570	255		38
v/s Ratio Prot	0.21	c0.34			c0.34			c0.02	0.15			0.02
v/s Ratio Perm			0.01			0.00				c0.17		
v/c Ratio	0.60	0.97	0.03		1.12	0.01		0.84	0.94	1.05		0.74
Uniform Delay, d1	29.3	35.1	23.4		38.5	26.9		53.4	45.5	46.0		53.5
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		0.67
Incremental Delay, d2	1.7	27.4	0.0		76.2	0.0		76.6	24.7	68.9		50.4
Delay (s)	31.0	62.5	23.4		114.7	26.9		130.0	70.1	114.9		86.2
Level of Service	C	E	C		F	C		F	E	F		F
Approach Delay (s)		49.5			113.4				92.5			
Approach LOS		D			F				F			

Intersection Summary			
HCM 2000 Control Delay	77.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.9
Intersection Capacity Utilization	93.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	297	76
Future Volume (vph)	297	76
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	319	82
RTOR Reduction (vph)	0	69
Lane Group Flow (vph)	319	13
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	17.6	17.6
Effective Green, g (s)	17.6	17.6
Actuated g/C Ratio	0.16	0.16
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	560	250
v/s Ratio Prot	0.09	
v/s Ratio Perm		0.01
v/c Ratio	0.57	0.05
Uniform Delay, d1	42.7	39.1
Progression Factor	0.86	2.69
Incremental Delay, d2	3.9	0.4
Delay (s)	40.6	105.6
Level of Service	D	F
Approach Delay (s)	56.0	
Approach LOS	E	

Intersection Summary

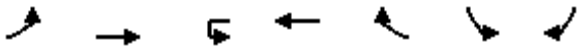
Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	305	12	209	337	26	7	5	276	21	13	2
Future Vol, veh/h	0	305	12	209	337	26	7	5	276	21	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	332	13	227	366	28	8	5	300	23	14	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	394	0	0	345	0	0	1181	1187	339	1325	1179	380
Stage 1	-	-	-	-	-	-	339	339	-	834	834	-
Stage 2	-	-	-	-	-	-	842	848	-	491	345	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1159	-	-	1208	-	-	166	188	701	132	190	665
Stage 1	-	-	-	-	-	-	673	638	-	361	382	-
Stage 2	-	-	-	-	-	-	357	376	-	557	634	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1159	-	-	1208	-	-	125	143	701	60	144	665
Mov Cap-2 Maneuver	-	-	-	-	-	-	125	143	-	60	144	-
Stage 1	-	-	-	-	-	-	673	638	-	361	290	-
Stage 2	-	-	-	-	-	-	257	285	-	316	634	-

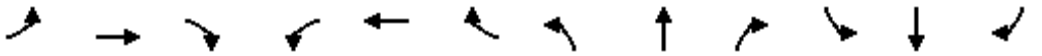
Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.2	17.6	85.4
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	594	1159	-	-	1208	-	-	81
HCM Lane V/C Ratio	0.527	-	-	-	0.188	-	-	0.483
HCM Control Delay (s)	17.6	0	-	-	8.7	0	-	85.4
HCM Lane LOS	C	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	3.1	0	-	-	0.7	-	-	2



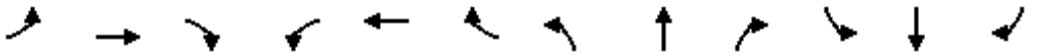
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	1206	129	1307	420	453	22
Future Volume (vph)	22	1206	129	1307	420	453	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	1.00	0.96		1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1752	3359		1752	1568
Flt Permitted	0.95	1.00	0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1752	3359		1752	1568
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	1269	136	1376	442	477	23
RTOR Reduction (vph)	0	0	0	27	0	0	16
Lane Group Flow (vph)	23	1269	136	1791	0	477	7
Confl. Peds. (#/hr)					1		
Turn Type	Prot	NA	Prot	NA		Prot	Perm
Protected Phases	7	4	3	8		6	
Permitted Phases							6
Actuated Green, G (s)	1.5	50.6	11.2	60.3		30.8	30.8
Effective Green, g (s)	1.5	50.6	11.2	60.3		30.8	30.8
Actuated g/C Ratio	0.01	0.48	0.11	0.57		0.29	0.29
Clearance Time (s)	4.2	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	24	1685	186	1925		512	459
v/s Ratio Prot	0.01	0.36	c0.08	c0.53		c0.27	
v/s Ratio Perm							0.00
v/c Ratio	0.96	0.75	0.73	0.93		0.93	0.01
Uniform Delay, d1	51.8	22.2	45.5	20.5		36.2	26.4
Progression Factor	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	163.4	2.0	13.8	8.7		23.9	0.0
Delay (s)	215.2	24.2	59.3	29.2		60.1	26.4
Level of Service	F	C	E	C		E	C
Approach Delay (s)		27.6		31.3		58.6	
Approach LOS		C		C		E	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	105.2	Sum of lost time (s)	12.6
Intersection Capacity Utilization	88.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1790	117	112	1426	0	0	0	137	242	41	518
Future Volume (vph)	0	1790	117	112	1426	0	0	0	137	242	41	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1845	1547
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1845	1547
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1946	127	122	1550	0	0	0	149	263	45	563
RTOR Reduction (vph)	0	0	54	0	0	0	0	0	60	0	0	53
Lane Group Flow (vph)	0	1946	73	122	1550	0	0	0	89	263	45	510
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		73.2	73.2	9.3	88.2				31.6	16.6	39.3	39.3
Effective Green, g (s)		73.2	73.2	9.3	88.2				31.6	16.6	39.3	39.3
Actuated g/C Ratio		0.52	0.52	0.07	0.63				0.23	0.12	0.28	0.28
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		1832	819	116	2208				360	403	517	434
v/s Ratio Prot		c0.56		c0.07	0.44				0.06	0.08	0.02	
v/s Ratio Perm			0.05									c0.33
v/c Ratio		1.06	0.09	1.05	0.70				0.25	0.65	0.09	1.17
Uniform Delay, d1		33.4	16.7	65.3	17.2				44.5	58.9	37.1	50.4
Progression Factor		1.00	1.00	0.93	0.99				1.00	1.00	1.00	1.00
Incremental Delay, d2		39.8	0.2	71.5	0.9				0.1	5.5	0.2	100.4
Delay (s)		73.2	16.9	132.1	17.9				44.6	64.5	37.3	150.8
Level of Service		E	B	F	B				D	E	D	F
Approach Delay (s)		69.8			26.3			44.6			118.8	
Approach LOS		E			C			D			F	

Intersection Summary			
HCM 2000 Control Delay	62.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	82.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	584	1246	393	234	914	174	230	379	120	83	404	579
Future Volume (veh/h)	584	1246	393	234	914	174	230	379	120	83	404	579
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	621	1326	418	249	972	185	245	403	128	88	430	616
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	245	1536	685	277	1116	212	132	818	365	109	899	706
Arrive On Green	0.28	0.87	0.87	0.16	0.76	0.76	0.01	0.08	0.08	0.06	0.26	0.26
Sat Flow, veh/h	1767	3526	1572	3428	2955	562	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	621	1326	418	249	579	578	245	403	128	88	430	616
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1754	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	19.4	27.4	10.2	10.0	32.8	33.0	5.4	15.4	10.8	6.9	14.5	29.9
Cycle Q Clear(g_c), s	19.4	27.4	10.2	10.0	32.8	33.0	5.4	15.4	10.8	6.9	14.5	29.9
Prop In Lane	1.00		1.00	1.00		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	245	1536	685	277	666	663	132	818	365	109	899	706
V/C Ratio(X)	2.54	0.86	0.61	0.90	0.87	0.87	1.85	0.49	0.35	0.81	0.48	0.87
Avail Cap(c_a), veh/h	245	1536	685	277	666	663	132	818	365	172	957	751
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.16	0.16	0.16	0.85	0.85	0.85	0.74	0.74	0.74	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	6.9	5.7	58.1	14.7	14.7	69.1	56.7	54.6	64.9	44.2	50.0
Incr Delay (d2), s/veh	693.1	1.2	0.7	25.8	12.7	12.8	404.5	0.6	0.7	6.7	0.7	11.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	54.7	3.4	2.1	5.0	8.7	8.7	9.8	7.3	4.7	3.3	6.4	11.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	743.7	8.0	6.4	83.9	27.3	27.5	473.6	57.3	55.4	71.5	44.9	61.2
LnGrp LOS	F	A	A	F	C	C	F	E	E	E	D	E
Approach Vol, veh/h		2365			1406			776			1134	
Approach Delay, s/veh		200.9			37.4			188.4			55.8	
Approach LOS		F			D			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	38.6	17.9	68.3	12.0	41.8	26.0	60.2
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 14	29.8	* 11	* 59	* 5.4	38.0	* 19	* 51
Max Q Clear Time (g_c+I1), s	8.9	17.4	12.0	29.4	7.4	31.9	21.4	35.0
Green Ext Time (p_c), s	0.0	3.5	0.0	20.2	0.0	3.9	0.0	9.3

Intersection Summary	
HCM 6th Ctrl Delay	129.8
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1003	0	0	973	311	205
Future Volume (vph)	1003	0	0	973	311	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1045	0	0	1014	324	214
RTOR Reduction (vph)	0	0	0	0	0	55
Lane Group Flow (vph)	1045	0	0	1014	324	159
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	96.4			96.4	33.5	33.5
Effective Green, g (s)	96.4			96.4	33.5	33.5
Actuated g/C Ratio	0.69			0.69	0.24	0.24
Clearance Time (s)	4.0			4.0	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2413			2413	419	375
v/s Ratio Prot	c0.30			0.29	c0.18	
v/s Ratio Perm						0.10
v/c Ratio	0.43			0.42	0.77	0.42
Uniform Delay, d1	9.7			9.6	49.7	45.1
Progression Factor	0.24			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.5	10.1	1.7
Delay (s)	2.7			10.1	59.8	46.8
Level of Service	A			B	E	D
Approach Delay (s)	2.7			10.1	54.6	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	16	48	906	223	70	677	76	19	176	440	39	2
Future Volume (vph)	16	48	906	223	70	677	76	19	176	440	39	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.97		1.00	0.98			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3401		1752	3445			1752	3505	1568	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3401		1752	3445			1752	3505	1568	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	51	964	237	74	720	81	20	187	468	41	2
RTOR Reduction (vph)	0	0	16	0	0	6	0	0	0	0	33	0
Lane Group Flow (vph)	0	68	1185	0	74	795	0	0	207	468	8	0
Confl. Peds. (#/hr)							8					
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		5.4	52.5		5.4	52.1			17.2	21.7	21.7	
Effective Green, g (s)		5.4	52.5		5.4	52.1			17.2	21.7	21.7	
Actuated g/C Ratio		0.05	0.48		0.05	0.47			0.16	0.20	0.20	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		86	1623		86	1631			273	691	309	
v/s Ratio Prot		0.04	c0.35		c0.04	0.23			0.12	c0.13		
v/s Ratio Perm											0.01	
v/c Ratio		0.79	0.73		0.86	0.49			0.76	0.68	0.03	
Uniform Delay, d1		51.7	23.1		51.9	19.8			44.4	40.9	35.6	
Progression Factor		1.00	1.00		1.00	1.00			0.31	0.26	1.00	
Incremental Delay, d2		37.6	2.9		53.9	1.0			7.8	1.8	0.0	
Delay (s)		89.4	26.0		105.8	20.9			21.7	12.3	35.6	
Level of Service		F	C		F	C			C	B	D	
Approach Delay (s)			29.4			28.0				16.3		
Approach LOS			C			C				B		

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.2
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	266	301	39
Future Volume (vph)	266	301	39
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1548
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1548
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	283	320	41
RTOR Reduction (vph)	0	0	34
Lane Group Flow (vph)	285	320	7
Confl. Peds. (#/hr)			1
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	13.6	18.1	18.1
Effective Green, g (s)	13.6	18.1	18.1
Actuated g/C Ratio	0.12	0.16	0.16
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	420	576	254
v/s Ratio Prot	c0.08	c0.09	
v/s Ratio Perm			0.00
v/c Ratio	0.68	0.56	0.03
Uniform Delay, d1	46.1	42.3	38.6
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	4.3	1.2	0.0
Delay (s)	50.4	43.4	38.6
Level of Service	D	D	D
Approach Delay (s)		46.2	
Approach LOS		D	

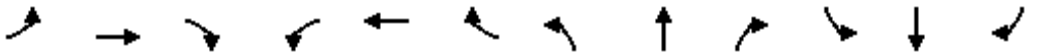
Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	1011	73	456	557	0	0	459
Future Volume (vph)	0	0	0	1011	73	456	557	0	0	459
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frpb, ped/bikes				1.00	0.98	1.00	1.00			1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00			1.00
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3471	1520	1736	3471			2733
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3471	1520	1736	3471			2733
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	1064	77	480	586	0	0	483
RTOR Reduction (vph)	0	0	0	0	40	0	0	0	0	268
Lane Group Flow (vph)	0	0	0	1064	37	480	586	0	0	215
Confl. Peds. (#/hr)					1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				34.0	34.0	23.5	22.4			31.1
Effective Green, g (s)				34.0	34.0	23.5	22.4			31.1
Actuated g/C Ratio				0.49	0.49	0.34	0.32			0.44
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1685	738	582	1110			1214
v/s Ratio Prot				c0.31		c0.28	0.17			0.08
v/s Ratio Perm					0.02					
v/c Ratio				0.63	0.05	0.82	0.53			0.18
Uniform Delay, d1				13.4	9.5	21.4	19.5			11.7
Progression Factor				1.26	1.48	1.22	0.91			1.00
Incremental Delay, d2				1.6	0.1	7.4	1.5			0.2
Delay (s)				18.4	14.2	33.5	19.2			11.9
Level of Service				B	B	C	B			B
Approach Delay (s)	0.0			18.1			25.6		11.9	
Approach LOS	A			B			C		B	

Intersection Summary			
HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	186	14	210	50	9	114	109	813	51	68	904	62
Future Volume (veh/h)	186	14	210	50	9	114	109	813	51	68	904	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	196	15	221	53	9	120	115	856	54	72	952	65
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	245	310	263	68	249	210	161	1904	120	112	1942	1525
Arrive On Green	0.07	0.17	0.17	0.04	0.13	0.13	0.05	0.57	0.57	0.07	1.00	1.00
Sat Flow, veh/h	3428	1856	1572	1767	1856	1569	3428	3368	212	3428	3526	2768
Grp Volume(v), veh/h	196	15	221	53	9	120	115	448	462	72	952	65
Grp Sat Flow(s),veh/h/ln	1714	1856	1572	1767	1856	1569	1714	1763	1817	1714	1763	1384
Q Serve(g_s), s	7.9	1.0	19.1	4.2	0.6	10.0	4.6	20.7	20.7	2.9	0.0	0.0
Cycle Q Clear(g_c), s	7.9	1.0	19.1	4.2	0.6	10.0	4.6	20.7	20.7	2.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	245	310	263	68	249	210	161	996	1027	112	1942	1525
V/C Ratio(X)	0.80	0.05	0.84	0.78	0.04	0.57	0.71	0.45	0.45	0.64	0.49	0.04
Avail Cap(c_a), veh/h	338	622	527	125	570	482	223	996	1027	167	1942	1525
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	64.0	49.0	56.5	66.7	52.7	56.8	65.8	17.7	17.7	64.6	0.0	0.0
Incr Delay (d2), s/veh	6.2	0.1	14.6	7.0	0.1	3.7	3.0	1.5	1.4	2.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.5	8.7	2.0	0.3	4.2	2.1	8.4	8.7	1.2	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.3	49.1	71.1	73.7	52.8	60.5	68.7	19.2	19.2	66.7	0.8	0.0
LnGrp LOS	E	D	E	E	D	E	E	B	B	E	A	A
Approach Vol, veh/h		432			182			1025			1089	
Approach Delay, s/veh		70.0			64.0			24.7			5.1	
Approach LOS		E			E			C			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	85.5	12.6	30.7	13.2	83.5	17.2	26.1
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 6.8	48.9	* 9.9	* 47	* 9.1	46.6	* 14	* 43
Max Q Clear Time (g_c+I1), s	4.9	22.7	6.2	21.1	6.6	2.0	9.9	12.0
Green Ext Time (p_c), s	0.0	13.4	0.0	1.9	0.0	19.6	0.1	0.7

Intersection Summary	
HCM 6th Ctrl Delay	26.7
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	86.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	12	21	58	7	123	19	852	66	177	927	57
Future Vol, veh/h	19	12	21	58	7	123	19	852	66	177	927	57
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	19	12	21	59	7	126	19	869	67	181	946	58

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1813	2311	502	1782	2307	468	1004	0	0	936	0	0
Stage 1	1337	1337	-	941	941	-	-	-	-	-	-	-
Stage 2	476	974	-	841	1366	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	48	37	512	~ 51	37	539	680	-	-	721	-	-
Stage 1	160	218	-	281	338	-	-	-	-	-	-	-
Stage 2	536	326	-	323	211	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	23	27	512	~ 25	27	539	680	-	-	721	-	-
Mov Cap-2 Maneuver	23	27	-	~ 25	27	-	-	-	-	-	-	-
Stage 1	156	163	-	273	329	-	-	-	-	-	-	-
Stage 2	391	317	-	214	158	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 322.9	$ 972.9	0.2	1.8
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	680	-	-	24	512	67	721	-	-
HCM Lane V/C Ratio	0.029	-	-	1.318	0.042	2.863	0.251	-	-
HCM Control Delay (s)	10.4	-	-	$ 533.3	12.3	$ 972.9	11.7	-	-
HCM Lane LOS	B	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4	0.1	19.3	1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	294	202	19	49	376	30	6	236	332	2	48	478
Future Volume (vph)	294	202	19	49	376	30	6	236	332	2	48	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6	4.6	4.2	4.9		4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538	1719	1789		1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538	1719	1789		1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	320	220	21	53	409	33	7	257	361	2	52	520
RTOR Reduction (vph)	0	0	17	0	3	0	0	0	282	0	0	0
Lane Group Flow (vph)	320	220	4	53	439	0	7	257	79	0	54	520
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	Prot	NA
Protected Phases	5	2		1	6		7	4		3	3	8
Permitted Phases			2						4			
Actuated Green, G (s)	18.5	15.2	15.2	28.5	24.9		0.7	17.8	17.8		3.1	20.2
Effective Green, g (s)	18.5	15.2	15.2	28.5	24.9		0.7	17.8	17.8		3.1	20.2
Actuated g/C Ratio	0.23	0.19	0.19	0.35	0.30		0.01	0.22	0.22		0.04	0.25
Clearance Time (s)	4.2	4.6	4.6	4.2	4.9		4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	388	336	285	598	544		14	748	334		65	848
v/s Ratio Prot	c0.19	0.12		c0.03	c0.25		0.00	0.07			c0.03	c0.15
v/s Ratio Perm			0.00						0.05			
v/c Ratio	0.82	0.65	0.01	0.09	0.81		0.50	0.34	0.24		0.83	0.61
Uniform Delay, d1	30.1	30.9	27.2	17.9	26.2		40.4	27.1	26.4		39.1	27.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.3	4.5	0.0	0.1	8.6		25.4	0.3	0.4		56.7	1.3
Delay (s)	43.4	35.4	27.2	18.0	34.8		65.8	27.3	26.8		95.8	28.7
Level of Service	D	D	C	B	C		E	C	C		F	C
Approach Delay (s)		39.7			33.0			27.4				34.2
Approach LOS		D			C			C				C

Intersection Summary			
HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	81.8	Sum of lost time (s)	17.5
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	38
Future Volume (vph)	38
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	41
RTOR Reduction (vph)	31
Lane Group Flow (vph)	10
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	20.2
Effective Green, g (s)	20.2
Actuated g/C Ratio	0.25
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	379
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.03
Uniform Delay, d1	23.3
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	23.4
Level of Service	C
Approach Delay (s)	
Approach LOS	

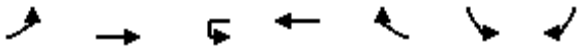
Intersection Summary

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	156	4	13	127	14	1	6	16	16	9	0
Future Vol, veh/h	14	156	4	13	127	14	1	6	16	16	9	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	170	4	14	138	15	1	7	17	17	10	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

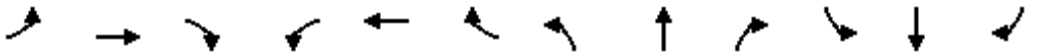
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	8.7	8.6	7.6	8.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	4%	8%	100%	0%	64%
Vol Thru, %	26%	90%	0%	90%	36%
Vol Right, %	70%	2%	0%	10%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	23	174	13	141	25
LT Vol	1	14	13	0	16
Through Vol	6	156	0	127	9
RT Vol	16	4	0	14	0
Lane Flow Rate	25	189	14	153	27
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.031	0.23	0.021	0.199	0.037
Departure Headway (Hd)	4.398	4.371	5.239	4.668	4.931
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	817	827	677	760	729
Service Time	2.411	2.371	3.021	2.45	2.944
HCM Lane V/C Ratio	0.031	0.229	0.021	0.201	0.037
HCM Control Delay	7.6	8.7	8.1	8.6	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.1	0.9	0.1	0.7	0.1



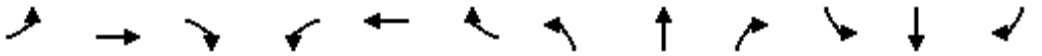
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	12	430	147	613	252	199	6
Future Volume (vph)	12	430	147	613	252	199	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2	4.2		4.2	
Lane Util. Factor	1.00	0.95	1.00	0.95		0.97	
Frpb, ped/bikes	1.00	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00	0.96		1.00	
Flt Protected	0.95	1.00	0.95	1.00		0.95	
Satd. Flow (prot)	1752	3505	1752	3331		3397	
Flt Permitted	0.95	1.00	0.95	1.00		0.95	
Satd. Flow (perm)	1752	3505	1752	3331		3397	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	467	160	666	274	216	7
RTOR Reduction (vph)	0	0	0	63	0	4	0
Lane Group Flow (vph)	13	467	160	877	0	219	0
Confl. Peds. (#/hr)					1		
Turn Type	Prot	NA	Prot	NA		Prot	
Protected Phases	7	4	3	8		6	
Permitted Phases							
Actuated Green, G (s)	0.6	16.8	7.0	23.2		6.1	
Effective Green, g (s)	0.6	16.8	7.0	23.2		6.1	
Actuated g/C Ratio	0.01	0.40	0.16	0.55		0.14	
Clearance Time (s)	4.2	4.2	4.2	4.2		4.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	24	1385	288	1818		487	
v/s Ratio Prot	0.01	0.13	c0.09	c0.26		c0.06	
v/s Ratio Perm							
v/c Ratio	0.54	0.34	0.56	0.48		0.45	
Uniform Delay, d1	20.8	9.0	16.3	5.9		16.7	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	22.7	0.1	2.3	0.2		0.7	
Delay (s)	43.5	9.1	18.6	6.2		17.3	
Level of Service	D	A	B	A		B	
Approach Delay (s)		10.0		8.0		17.3	
Approach LOS		B		A		B	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	42.5	Sum of lost time (s)	12.6
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	685	49	54	810	0	0	0	51	185	23	200
Future Volume (vph)	0	685	49	54	810	0	0	0	51	185	23	200
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	0.95	0.95
Frt		1.00	0.85	1.00	1.00				0.86	1.00	0.88	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1529	1475
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1529	1475
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	737	53	58	871	0	0	0	55	199	25	215
RTOR Reduction (vph)	0	0	31	0	0	0	0	0	44	0	35	83
Lane Group Flow (vph)	0	737	22	58	871	0	0	0	11	199	87	35
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		28.7	28.7	2.6	37.0				14.0	8.7	20.5	20.5
Effective Green, g (s)		28.7	28.7	2.6	37.0				14.0	8.7	20.5	20.5
Actuated g/C Ratio		0.41	0.41	0.04	0.53				0.20	0.12	0.29	0.29
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		1423	636	64	1834				316	418	447	431
v/s Ratio Prot		c0.21		0.03	c0.25				0.01	c0.06	c0.06	
v/s Ratio Perm			0.01									0.02
v/c Ratio		0.52	0.03	0.91	0.47				0.03	0.48	0.19	0.08
Uniform Delay, d1		15.5	12.4	33.6	10.4				22.6	28.5	18.6	17.9
Progression Factor		1.00	1.00	1.28	1.08				1.00	1.00	1.00	1.00
Incremental Delay, d2		1.4	0.1	72.7	0.8				0.0	2.1	0.5	0.2
Delay (s)		16.8	12.5	115.7	12.0				22.6	30.6	19.1	18.1
Level of Service		B	B	F	B				C	C	B	B
Approach Delay (s)		16.5			18.4			22.6			24.1	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	607	204	229	746	145	158	261	92	53	383	304
Future Volume (veh/h)	230	607	204	229	746	145	158	261	92	53	383	304
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	235	619	208	234	761	148	161	266	94	54	391	310
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	283	1805	883	280	1802	803	169	624	278	69	589	690
Arrive On Green	0.16	1.00	1.00	0.16	1.00	1.00	0.10	0.35	0.35	0.04	0.17	0.17
Sat Flow, veh/h	3428	3526	1572	3428	3526	1572	3428	3526	1567	1767	3526	2768
Grp Volume(v), veh/h	235	619	208	234	761	148	161	266	94	54	391	310
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1714	1763	1572	1714	1763	1567	1767	1763	1384
Q Serve(g_s), s	9.3	0.0	0.0	9.3	0.0	0.0	6.5	8.0	6.2	4.2	14.5	13.3
Cycle Q Clear(g_c), s	9.3	0.0	0.0	9.3	0.0	0.0	6.5	8.0	6.2	4.2	14.5	13.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	283	1805	883	280	1802	803	169	624	278	69	589	690
V/C Ratio(X)	0.83	0.34	0.24	0.84	0.42	0.18	0.95	0.43	0.34	0.78	0.66	0.45
Avail Cap(c_a), veh/h	451	1805	883	384	1802	803	169	881	392	125	957	979
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.88	0.88	0.88	0.82	0.82	0.82	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	0.0	0.0	57.6	0.0	0.0	62.9	39.8	39.2	66.7	54.6	44.4
Incr Delay (d2), s/veh	3.2	0.5	0.6	7.3	0.6	0.4	48.8	0.6	1.0	6.9	2.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.1	0.1	4.0	0.2	0.1	3.8	3.2	2.3	2.0	6.6	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.7	0.5	0.6	65.0	0.6	0.4	111.8	40.4	40.2	73.6	56.8	45.2
LnGrp LOS	E	A	A	E	A	A	F	D	D	E	E	D
Approach Vol, veh/h		1062			1143			521			755	
Approach Delay, s/veh		13.8			13.8			62.4			53.3	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	30.9	18.0	79.0	13.5	29.5	18.1	78.9
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 9.9	35.0	* 16	* 53	* 6.9	38.0	* 18	* 50
Max Q Clear Time (g_c+I1), s	6.2	10.0	11.3	2.0	8.5	16.5	11.3	2.0
Green Ext Time (p_c), s	0.0	3.1	0.2	9.5	0.0	6.2	0.3	11.0

Intersection Summary	
HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

Notes

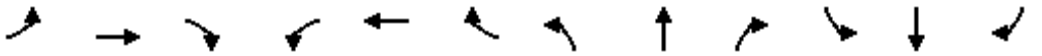
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	550	0	0	775	373	77
Future Volume (vph)	550	0	0	775	373	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	0.97	
Flt Protected	1.00			1.00	0.96	
Satd. Flow (prot)	3505			3505	3348	
Flt Permitted	1.00			1.00	0.96	
Satd. Flow (perm)	3505			3505	3348	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	598	0	0	842	405	84
RTOR Reduction (vph)	0	0	0	0	34	0
Lane Group Flow (vph)	598	0	0	842	455	0
Turn Type	NA			NA	Prot	
Protected Phases	2			2	8	
Permitted Phases						
Actuated Green, G (s)	41.2			41.2	16.6	
Effective Green, g (s)	41.2			41.2	16.6	
Actuated g/C Ratio	0.59			0.59	0.24	
Clearance Time (s)	6.1			6.1	6.1	
Vehicle Extension (s)	3.8			3.8	5.1	
Lane Grp Cap (vph)	2062			2062	793	
v/s Ratio Prot	0.17			c0.24	c0.14	
v/s Ratio Perm						
v/c Ratio	0.29			0.41	0.57	
Uniform Delay, d1	7.1			7.8	23.6	
Progression Factor	1.32			1.00	1.00	
Incremental Delay, d2	0.3			0.6	1.6	
Delay (s)	9.8			8.4	25.2	
Level of Service	A			A	C	
Approach Delay (s)	9.8			8.4	25.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	10	23	44	2	125	19	771	43	90	562	35
Future Volume (veh/h)	41	10	23	44	2	125	19	771	43	90	562	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	44	11	0	47	2	133	20	820	46	96	598	37
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	63	230		66	3	195	33	1101	62	119	1259	78
Arrive On Green	0.04	0.13	0.00	0.04	0.13	0.13	0.02	0.34	0.34	0.07	0.39	0.39
Sat Flow, veh/h	1682	1767	0	1682	22	1475	1682	3231	181	1682	3211	198
Grp Volume(v), veh/h	44	11	0	47	0	135	20	426	440	96	312	323
Grp Sat Flow(s),veh/h/ln	1682	1767	0	1682	0	1497	1682	1678	1734	1682	1678	1731
Q Serve(g_s), s	1.2	0.3	0.0	1.3	0.0	4.0	0.6	10.5	10.5	2.6	6.5	6.6
Cycle Q Clear(g_c), s	1.2	0.3	0.0	1.3	0.0	4.0	0.6	10.5	10.5	2.6	6.5	6.6
Prop In Lane	1.00		0.00	1.00		0.99	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	63	230		66	0	198	33	572	591	119	658	679
V/C Ratio(X)	0.70	0.05		0.72	0.00	0.68	0.61	0.74	0.74	0.81	0.47	0.48
Avail Cap(c_a), veh/h	157	676		157	0	617	154	788	814	207	842	868
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.4	17.9	0.0	22.3	0.0	19.5	22.9	13.7	13.7	21.5	10.7	10.7
Incr Delay (d2), s/veh	13.4	0.1	0.0	13.5	0.0	4.1	16.7	2.5	2.4	11.9	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.1	0.0	0.7	0.0	1.4	0.3	3.3	3.4	1.3	1.8	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.8	18.0	0.0	35.8	0.0	23.6	39.6	16.2	16.1	33.4	11.2	11.2
LnGrp LOS	D	B		D	A	C	D	B	B	C	B	B
Approach Vol, veh/h		55			182			886			731	
Approach Delay, s/veh		32.2			26.7			16.7			14.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	21.3	6.0	12.1	5.1	23.8	5.9	12.2
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 5.8	22.1	* 4.4	18.0	* 4.3	23.6	* 4.4	* 19
Max Q Clear Time (g_c+I1), s	4.6	12.5	3.3	2.3	2.6	8.6	3.2	6.0
Green Ext Time (p_c), s	0.0	3.5	0.0	0.0	0.0	3.1	0.0	0.5

Intersection Summary	
HCM 6th Ctrl Delay	17.1
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	344	585	47	55	521	8	1	33	496	438	3	23
Future Volume (vph)	344	585	47	55	521	8	1	33	496	438	3	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6	4.6	4.2	4.9			4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00			1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548	1752	1840			1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548	1752	1840			1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	370	629	51	59	560	9	1	35	533	471	3	25
RTOR Reduction (vph)	0	0	27	0	1	0	0	0	0	199	0	0
Lane Group Flow (vph)	370	629	24	59	568	0	0	36	533	272	0	28
Confl. Peds. (#/hr)			1	1								
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	5	2		1	6		7	7	4		3	3
Permitted Phases			2							4		
Actuated Green, G (s)	26.2	50.0	50.0	11.0	34.5			3.6	25.0	25.0		2.1
Effective Green, g (s)	26.2	50.0	50.0	11.0	34.5			3.6	25.0	25.0		2.1
Actuated g/C Ratio	0.25	0.47	0.47	0.10	0.33			0.03	0.24	0.24		0.02
Clearance Time (s)	4.2	4.6	4.6	4.2	4.9			4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	435	876	735	183	602			59	832	372		34
v/s Ratio Prot	c0.21	0.34		0.03	c0.31			c0.02	0.15			0.02
v/s Ratio Perm			0.02							c0.17		
v/c Ratio	0.85	0.72	0.03	0.32	0.94			0.61	0.64	0.73		0.82
Uniform Delay, d1	37.7	22.0	14.8	43.7	34.5			50.2	36.1	37.0		51.4
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Incremental Delay, d2	14.7	2.8	0.0	1.0	23.6			17.2	1.7	7.2		85.0
Delay (s)	52.4	24.9	14.8	44.7	58.0			67.4	37.8	44.3		136.4
Level of Service	D	C	B	D	E			E	D	D		F
Approach Delay (s)		34.1			56.8				41.8			
Approach LOS		C			E				D			

Intersection Summary			
HCM 2000 Control Delay	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	105.3	Sum of lost time (s)	17.5
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	297	76
Future Volume (vph)	297	76
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	319	82
RTOR Reduction (vph)	0	64
Lane Group Flow (vph)	319	18
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	23.5	23.5
Effective Green, g (s)	23.5	23.5
Actuated g/C Ratio	0.22	0.22
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	782	349
v/s Ratio Prot	0.09	
v/s Ratio Perm		0.01
v/c Ratio	0.41	0.05
Uniform Delay, d1	35.0	32.1
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	0.1
Delay (s)	35.3	32.2
Level of Service	D	C
Approach Delay (s)	41.3	
Approach LOS	D	

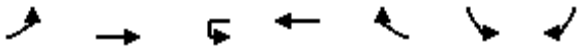
Intersection Summary

Intersection	
Intersection Delay, s/veh	16.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	305	12	209	337	26	7	5	276	21	13	2
Future Vol, veh/h	0	305	12	209	337	26	7	5	276	21	13	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	332	13	227	366	28	8	5	300	23	14	2
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

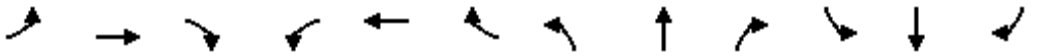
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	16.9	18.2	14.8	11
HCM LOS	C	C	B	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	2%	0%	100%	0%	58%
Vol Thru, %	2%	96%	0%	93%	36%
Vol Right, %	96%	4%	0%	7%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	288	317	209	363	36
LT Vol	7	0	209	0	21
Through Vol	5	305	0	337	13
RT Vol	276	12	0	26	2
Lane Flow Rate	313	345	227	395	39
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.506	0.574	0.421	0.67	0.08
Departure Headway (Hd)	5.821	5.993	6.675	6.116	7.376
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	614	600	536	588	489
Service Time	3.898	4.068	4.448	3.889	5.376
HCM Lane V/C Ratio	0.51	0.575	0.424	0.672	0.08
HCM Control Delay	14.8	16.9	14.3	20.5	11
HCM Lane LOS	B	C	B	C	B
HCM 95th-tile Q	2.9	3.6	2.1	5	0.3



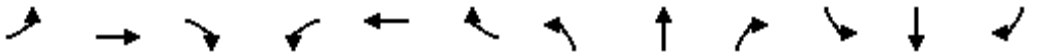
Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	1206	129	1307	420	453	22
Future Volume (vph)	22	1206	129	1307	420	453	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2	4.2		4.2	
Lane Util. Factor	1.00	0.95	1.00	0.95		0.97	
Frpb, ped/bikes	1.00	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00	0.96		0.99	
Flt Protected	0.95	1.00	0.95	1.00		0.95	
Satd. Flow (prot)	1752	3505	1752	3359		3392	
Flt Permitted	0.95	1.00	0.95	1.00		0.95	
Satd. Flow (perm)	1752	3505	1752	3359		3392	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	23	1269	136	1376	442	477	23
RTOR Reduction (vph)	0	0	0	23	0	4	0
Lane Group Flow (vph)	23	1269	136	1795	0	496	0
Confl. Peds. (#/hr)					1		
Turn Type	Prot	NA	Prot	NA		Prot	
Protected Phases	7	4	3	8		6	
Permitted Phases							
Actuated Green, G (s)	1.4	41.4	17.1	57.1		18.6	
Effective Green, g (s)	1.4	41.4	17.1	57.1		18.6	
Actuated g/C Ratio	0.02	0.46	0.19	0.64		0.21	
Clearance Time (s)	4.2	4.2	4.2	4.2		4.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0		3.0	
Lane Grp Cap (vph)	27	1617	333	2138		703	
v/s Ratio Prot	0.01	c0.36	0.08	c0.53		c0.15	
v/s Ratio Perm							
v/c Ratio	0.85	0.78	0.41	0.84		0.71	
Uniform Delay, d1	44.0	20.4	31.9	12.7		33.0	
Progression Factor	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2	110.0	2.6	0.8	3.1		3.2	
Delay (s)	154.0	23.0	32.7	15.8		36.2	
Level of Service	F	C	C	B		D	
Approach Delay (s)		25.3		17.0		36.2	
Approach LOS		C		B		D	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	12.6
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1790	117	112	1426	0	0	0	137	242	41	518
Future Volume (vph)	0	1790	117	112	1426	0	0	0	137	242	41	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	0.95	0.95
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	0.99	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	0.87	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1510	1470
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1510	1470
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1946	127	122	1550	0	0	0	149	263	45	563
RTOR Reduction (vph)	0	0	48	0	0	0	0	0	64	0	42	58
Lane Group Flow (vph)	0	1946	79	122	1550	0	0	0	85	263	268	240
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		81.1	81.1	10.7	97.5				23.7	16.6	30.0	30.0
Effective Green, g (s)		81.1	81.1	10.7	97.5				23.7	16.6	30.0	30.0
Actuated g/C Ratio		0.58	0.58	0.08	0.70				0.17	0.12	0.21	0.21
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		2030	908	133	2440				270	403	323	315
v/s Ratio Prot		c0.56		c0.07	0.44				0.05	0.08	c0.18	
v/s Ratio Perm			0.05									0.16
v/c Ratio		0.96	0.09	0.92	0.64				0.31	0.65	0.83	0.76
Uniform Delay, d1		27.9	13.1	64.2	11.6				51.0	58.9	52.6	51.6
Progression Factor		1.00	1.00	0.84	1.07				1.00	1.00	1.00	1.00
Incremental Delay, d2		12.4	0.2	37.5	0.8				0.2	5.5	18.4	12.7
Delay (s)		40.2	13.2	91.6	13.2				51.3	64.5	71.0	64.3
Level of Service		D	B	F	B				D	E	E	E
Approach Delay (s)		38.6			18.9			51.3			66.7	
Approach LOS		D			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	37.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	84.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	548	1246	393	234	914	174	230	379	120	83	404	579
Future Volume (veh/h)	548	1246	393	234	914	174	230	379	120	83	404	579
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	583	1326	418	249	972	185	245	403	128	88	430	616
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	621	1710	828	284	1364	608	142	537	239	159	707	1057
Arrive On Green	0.24	0.65	0.65	0.11	0.51	0.51	0.01	0.05	0.05	0.09	0.20	0.20
Sat Flow, veh/h	3428	3526	1572	3428	3526	1571	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	583	1326	418	249	972	185	245	403	128	88	430	616
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1714	1763	1571	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	23.4	37.4	7.5	10.0	29.6	6.6	5.8	15.8	8.8	6.7	15.5	17.6
Cycle Q Clear(g_c), s	23.4	37.4	7.5	10.0	29.6	6.6	5.8	15.8	8.8	6.7	15.5	17.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	621	1710	828	284	1364	608	142	537	239	159	707	1057
V/C Ratio(X)	0.94	0.78	0.50	0.88	0.71	0.30	1.72	0.75	0.53	0.55	0.61	0.58
Avail Cap(c_a), veh/h	622	1710	828	284	1364	608	142	761	339	172	957	1253
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	0.84	0.84	0.84	0.74	0.74	0.74	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	19.4	5.5	61.6	28.0	11.1	69.0	63.9	39.0	61.0	50.9	18.1
Incr Delay (d2), s/veh	9.6	1.2	0.7	21.2	2.7	1.1	347.2	3.0	2.3	1.5	1.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	13.5	2.8	5.1	12.0	3.5	9.4	7.7	3.8	3.1	7.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.0	20.6	6.3	82.7	30.7	12.2	416.2	66.8	41.3	62.5	52.4	18.9
LnGrp LOS	E	C	A	F	C	B	F	E	D	E	D	B
Approach Vol, veh/h		2327			1406			776			1134	
Approach Delay, s/veh		28.4			37.5			172.9			35.0	
Approach LOS		C			D			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	27.4	18.2	75.2	12.4	34.2	32.0	61.5
Change Period (Y+Rc), s	6.6	* 6.1	* 6.6	* 7.3	6.6	* 6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	13.6	* 30	* 12	* 58	5.8	* 38	* 25	* 44
Max Q Clear Time (g_c+I1), s	8.7	17.8	12.0	39.4	7.8	19.6	25.4	31.6
Green Ext Time (p_c), s	0.0	3.5	0.0	14.3	0.0	8.5	0.0	7.7

Intersection Summary	
HCM 6th Ctrl Delay	51.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

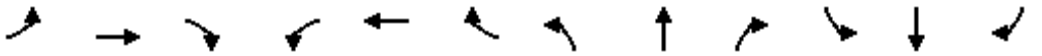
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1003	0	0	973	311	205
Future Volume (vph)	1003	0	0	973	311	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	6.1	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	0.94	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	3505			3505	3267	
Flt Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	3505			3505	3267	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1045	0	0	1014	324	214
RTOR Reduction (vph)	0	0	0	0	44	0
Lane Group Flow (vph)	1045	0	0	1014	494	0
Turn Type	NA			NA	Prot	
Protected Phases	2			2	8	
Permitted Phases						
Actuated Green, G (s)	101.0			101.0	28.9	
Effective Green, g (s)	101.0			101.0	28.9	
Actuated g/C Ratio	0.72			0.72	0.21	
Clearance Time (s)	4.0			4.0	6.1	
Vehicle Extension (s)	3.8			3.8	5.1	
Lane Grp Cap (vph)	2528			2528	674	
v/s Ratio Prot	c0.30			0.29	c0.15	
v/s Ratio Perm						
v/c Ratio	0.41			0.40	0.73	
Uniform Delay, d1	7.7			7.6	51.9	
Progression Factor	0.11			1.00	1.00	
Incremental Delay, d2	0.3			0.5	5.0	
Delay (s)	1.2			8.1	57.0	
Level of Service	A			A	E	
Approach Delay (s)	1.2			8.1	57.0	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	10.1
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	12	21	58	7	123	19	852	66	177	927	57
Future Volume (veh/h)	19	12	21	58	7	123	19	852	66	177	927	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	19	12	0	59	7	126	19	869	67	181	946	58
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	33	188		79	11	192	33	1230	95	153	1480	91
Arrive On Green	0.02	0.10	0.00	0.04	0.13	0.13	0.02	0.37	0.37	0.09	0.44	0.44
Sat Flow, veh/h	1767	1856	0	1767	83	1502	1767	3317	256	1767	3374	207
Grp Volume(v), veh/h	19	12	0	59	0	133	19	462	474	181	494	510
Grp Sat Flow(s),veh/h/ln	1767	1856	0	1767	0	1585	1767	1763	1810	1767	1763	1818
Q Serve(g_s), s	0.5	0.3	0.0	1.6	0.0	4.0	0.5	11.1	11.1	4.3	10.9	10.9
Cycle Q Clear(g_c), s	0.5	0.3	0.0	1.6	0.0	4.0	0.5	11.1	11.1	4.3	10.9	10.9
Prop In Lane	1.00		0.00	1.00		0.95	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	33	188		79	0	202	33	653	671	153	773	798
V/C Ratio(X)	0.58	0.06		0.74	0.00	0.66	0.58	0.71	0.71	1.18	0.64	0.64
Avail Cap(c_a), veh/h	153	1292		153	0	1149	153	1139	1169	153	1139	1175
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	20.2	0.0	23.4	0.0	20.6	24.2	13.3	13.3	22.7	10.9	10.9
Incr Delay (d2), s/veh	15.1	0.1	0.0	12.9	0.0	3.6	15.1	1.4	1.4	130.6	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	0.0	0.9	0.0	1.5	0.3	3.5	3.5	7.1	3.1	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.3	20.3	0.0	36.3	0.0	24.2	39.3	14.7	14.7	153.3	11.8	11.7
LnGrp LOS	D	C		D	A	C	D	B	B	F	B	B
Approach Vol, veh/h		31			192			955			1185	
Approach Delay, s/veh		31.9			27.9			15.2			33.4	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	23.7	6.4	11.0	5.1	27.1	5.1	12.3
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.3	34.6	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	6.3	13.1	3.6	2.3	2.5	12.9	2.5	6.0
Green Ext Time (p_c), s	0.0	5.3	0.0	0.0	0.0	5.8	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	25.6
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	NB	SB	SB	SE	SE	SE	NW	NW	NW
Directions Served	L	T	R	L	TR	T	T	R	UL	T	T
Maximum Queue (ft)	300	298	120	270	558	79	99	156	56	137	104
Average Queue (ft)	174	119	14	64	296	25	19	61	6	38	36
95th Queue (ft)	294	245	64	217	485	62	59	140	28	99	92
Link Distance (ft)		345			1303	2547	2547			1101	1101
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	250		80	150				70	75		
Storage Blk Time (%)	6	12			44		1	7	0	4	0
Queuing Penalty (veh)	14	37			21		4	8	0	2	0

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	68	31	79	30	31
Average Queue (ft)	37	12	38	11	10
95th Queue (ft)	60	34	60	32	31
Link Distance (ft)	2669		2638	2731	2628
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	TR	L	LR
Maximum Queue (ft)	32	124	112	140	198	182	70	137
Average Queue (ft)	9	68	52	71	93	61	27	60
95th Queue (ft)	31	115	103	112	174	131	63	104
Link Distance (ft)		1170	1170		669	669		715
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100			120			100	
Storage Blk Time (%)		2		1	3			1
Queuing Penalty (veh)		0		2	4			1

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	TR	R
Maximum Queue (ft)	183	205	150	72	249	199	64	138	136	141	47
Average Queue (ft)	83	96	18	37	126	85	18	49	69	52	22
95th Queue (ft)	140	162	63	78	201	178	45	92	123	96	44
Link Distance (ft)	669	669			512	512	217			1827	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		4			1						
Queuing Penalty (veh)		2			1						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	151	249	341	313	120	200	250	321	231	99	154	280
Average Queue (ft)	97	86	136	154	80	106	112	177	156	25	93	110
95th Queue (ft)	144	159	232	249	161	180	242	277	238	62	153	201
Link Distance (ft)			512	512				466	466			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200	200			60	150	150			250	170	170
Storage Blk Time (%)			1	33	1	6	3	13	0		0	0
Queuing Penalty (veh)			2	63	5	22	10	29	0		0	0

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	R
Maximum Queue (ft)	598	390	129	200	280	236	124	121
Average Queue (ft)	133	99	39	64	165	116	58	48
95th Queue (ft)	327	256	93	157	254	200	105	88
Link Distance (ft)	575	575			1136	1136		
Upstream Blk Time (%)	1							
Queuing Penalty (veh)	5							
Storage Bay Dist (ft)			80	100			200	200
Storage Blk Time (%)	8	18	0	0	35	3		
Queuing Penalty (veh)	12	17	0	0	18	10		

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	LR
Maximum Queue (ft)	174	205	233	173	153	198
Average Queue (ft)	58	74	90	63	92	120
95th Queue (ft)	139	167	192	132	152	182
Link Distance (ft)	466	466	550	550		1193
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					350	
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	144	192	178	150	208	238	148	102	114	102	71	188
Average Queue (ft)	15	52	84	48	90	96	56	46	56	15	23	95
95th Queue (ft)	63	129	166	118	176	191	122	89	100	53	51	146
Link Distance (ft)		550	550		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)	0	3		3	7		2		8	0		4
Queuing Penalty (veh)	0	1		10	5		2		1	0		5

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW	NW
Directions Served	T	R
Maximum Queue (ft)	175	134
Average Queue (ft)	106	4
95th Queue (ft)	154	44
Link Distance (ft)	2910	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		70
Storage Blk Time (%)	29	
Queuing Penalty (veh)	7	

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	250	264	194	393	353	183	160
Average Queue (ft)	115	112	159	145	100	98	49
95th Queue (ft)	229	229	224	339	215	160	123
Link Distance (ft)	762	762		575	575	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			30	7		0	0
Queuing Penalty (veh)			60	27		0	0

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	22	66	35	48	49	30	76	50	48	358	378	130
Average Queue (ft)	1	9	5	9	13	6	33	22	4	166	187	45
95th Queue (ft)	8	33	19	27	39	25	70	53	24	316	334	100
Link Distance (ft)			291			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)		0								1		
Queuing Penalty (veh)		0								0		

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB
Directions Served	L	T	T	R
Maximum Queue (ft)	48	283	308	49
Average Queue (ft)	8	96	113	19
95th Queue (ft)	31	221	247	44
Link Distance (ft)		762	762	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	320			320
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	76	90	109	78	72	190	214	137	161	199
Average Queue (ft)	28	23	34	49	15	93	98	54	59	88
95th Queue (ft)	66	55	79	79	45	156	169	103	136	170
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)										
Queuing Penalty (veh)										

Network Summary

Network wide Queuing Penalty: 411

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	NB	B29	B29	SB	SB	SE	SE	SE	SE	NW
Directions Served	L	T	R	T		L	TR	UL	T	T	R	UL
Maximum Queue (ft)	345	441	120	1144	1026	269	1342	42	386	416	170	41
Average Queue (ft)	250	353	9	384	239	89	793	5	136	177	132	6
95th Queue (ft)	399	519	46	1087	904	269	1467	22	251	333	204	27
Link Distance (ft)		345		1136	1136		1303		2547	2547		
Upstream Blk Time (%)	3	21		0			16					
Queuing Penalty (veh)	0	236		2			0					
Storage Bay Dist (ft)	250		80			150		200			70	75
Storage Blk Time (%)	18	40					66		1	23	32	
Queuing Penalty (veh)	117	162					36		0	103	78	

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NW	NW	NW
Directions Served	T	T	R
Maximum Queue (ft)	93	105	5
Average Queue (ft)	21	27	0
95th Queue (ft)	66	70	2
Link Distance (ft)	1101	1101	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			120
Storage Blk Time (%)	1	0	
Queuing Penalty (veh)	0	0	

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	98	73	77	144	51
Average Queue (ft)	53	43	48	59	19
95th Queue (ft)	77	63	72	105	41
Link Distance (ft)	2669		2638	2731	2628
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		250			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	U	T	TR	L	LR
Maximum Queue (ft)	189	786	798	195	681	712	200	586
Average Queue (ft)	42	552	553	158	458	444	150	249
95th Queue (ft)	154	877	886	241	737	773	236	467
Link Distance (ft)		1170	1170		669	669		715
Upstream Blk Time (%)					1	1		
Queuing Penalty (veh)					9	10		
Storage Bay Dist (ft)	100			120			100	
Storage Blk Time (%)		65		38	31		24	52
Queuing Penalty (veh)		14		255	40		58	117

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	TR	R
Maximum Queue (ft)	689	719	150	300	508	461	230	190	204	284	246
Average Queue (ft)	641	649	81	152	335	282	67	93	98	155	127
95th Queue (ft)	831	829	195	302	514	453	145	157	160	232	203
Link Distance (ft)	669	669			512	512	217			1827	
Upstream Blk Time (%)	12	17			0		1				
Queuing Penalty (veh)	111	155			2		0				
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		50	0	2	17						
Queuing Penalty (veh)		58	0	17	20						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	225	250	551	564	120	199	250	529	509	370	225	280
Average Queue (ft)	216	241	466	468	83	145	191	373	357	165	177	210
95th Queue (ft)	243	281	648	664	160	220	336	565	524	421	277	335
Link Distance (ft)			512	512				466	466			
Upstream Blk Time (%)			6	5				7	3			
Queuing Penalty (veh)			69	52				46	20			
Storage Bay Dist (ft)	200	200			60	150	150			250	170	170
Storage Blk Time (%)	48	41	11	47	5	35	6	38	20		48	57
Queuing Penalty (veh)	313	266	67	162	34	166	31	88	35		91	109

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	R
Maximum Queue (ft)	604	613	130	200	287	279	285	250
Average Queue (ft)	288	235	68	86	182	114	127	110
95th Queue (ft)	570	517	145	181	262	197	235	197
Link Distance (ft)	575	575			1136	1136		
Upstream Blk Time (%)	10	0						
Queuing Penalty (veh)	48	1						
Storage Bay Dist (ft)			80	100			200	200
Storage Blk Time (%)	13	28	3	9	38	0	3	0
Queuing Penalty (veh)	23	33	5	17	31	0	6	0

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	LR
Maximum Queue (ft)	376	407	356	327	355	442
Average Queue (ft)	70	82	163	141	181	245
95th Queue (ft)	208	230	323	291	305	389
Link Distance (ft)	466	466	550	550		1193
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					350	
Storage Blk Time (%)					0	3
Queuing Penalty (veh)					0	5

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	SE	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	R	UL	L
Maximum Queue (ft)	145	478	512	150	221	222	228	240	254	140	158	159
Average Queue (ft)	84	270	304	73	132	146	90	109	128	14	59	90
95th Queue (ft)	185	463	504	154	202	214	171	214	238	81	120	149
Link Distance (ft)		550	550		2655	2655		935	935			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			70	120	120
Storage Blk Time (%)	0	35		14	17		4	11	29		0	3
Queuing Penalty (veh)	0	22		48	12		8	21	11		1	4

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW	NW	NW
Directions Served	T	T	R
Maximum Queue (ft)	145	154	129
Average Queue (ft)	68	86	4
95th Queue (ft)	122	130	43
Link Distance (ft)	2910	2910	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			70
Storage Blk Time (%)	2	24	
Queuing Penalty (veh)	5	9	

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	279	246	194	411	218	156	118
Average Queue (ft)	114	110	178	205	111	96	42
95th Queue (ft)	229	214	210	425	187	145	95
Link Distance (ft)	762	762		575	575	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			39	14		0	
Queuing Penalty (veh)			99	63		0	

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	B31	WB	WB	WB	NB	NB	NB	NB
Directions Served	L	L	T	R	T	L	T	R	L	L	T	TR
Maximum Queue (ft)	100	124	362	220	61	95	38	76	125	118	329	367
Average Queue (ft)	69	94	70	86	2	35	9	42	70	31	154	178
95th Queue (ft)	120	142	235	202	20	80	32	68	118	81	287	309
Link Distance (ft)			291		221		356	356			673	673
Upstream Blk Time (%)			1									
Queuing Penalty (veh)			0									
Storage Bay Dist (ft)	75	75		100		100			300	300		
Storage Blk Time (%)	6	37	0	4		0					1	
Queuing Penalty (veh)	14	82	0	8		0					1	

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (ft)	109	56	444	391	43
Average Queue (ft)	45	11	173	173	14
95th Queue (ft)	80	42	308	307	35
Link Distance (ft)			762	762	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	320	320			320
Storage Blk Time (%)			2	2	
Queuing Penalty (veh)			1	1	

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	72	74	76	77	118	242	261	278	299	336
Average Queue (ft)	14	19	42	45	24	131	126	163	130	141
95th Queue (ft)	42	48	82	73	74	217	214	298	276	284
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)						0		9	1	
Queuing Penalty (veh)						0		43	1	

Network Summary

Network wide Queuing Penalty: 3773

Appendix I: Cumulative Year 2046 plus Project Traffic Conditions

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	327	212	19	49	389	30	6	236	349	2	48	478
Future Volume (vph)	327	212	19	49	389	30	6	236	349	2	48	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00	1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538		1800	1538	1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538		1800	1538	1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	355	230	21	53	423	33	7	257	379	2	52	520
RTOR Reduction (vph)	0	0	15	0	0	24	0	0	306	0	0	0
Lane Group Flow (vph)	355	230	6	0	476	9	7	257	73	0	54	520
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	Prot	NA
Protected Phases	2	2		6	6		7	4		3	3	8
Permitted Phases			2			6			4			
Actuated Green, G (s)	23.4	23.4	23.4		24.6	24.6	0.7	16.5	16.5		3.2	19.0
Effective Green, g (s)	23.4	23.4	23.4		24.6	24.6	0.7	16.5	16.5		3.2	19.0
Actuated g/C Ratio	0.27	0.27	0.27		0.29	0.29	0.01	0.19	0.19		0.04	0.22
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9	4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	469	494	420		517	441	14	662	296		64	763
v/s Ratio Prot	c0.21	0.13			c0.26		0.00	0.07			c0.03	c0.15
v/s Ratio Perm			0.00			0.01			0.05			
v/c Ratio	0.76	0.47	0.01		0.92	0.02	0.50	0.39	0.25		0.84	0.68
Uniform Delay, d1	28.5	25.9	22.7		29.6	21.9	42.3	30.1	29.3		41.0	30.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.9	0.7	0.0		21.9	0.0	25.4	0.4	0.4		60.7	2.5
Delay (s)	35.4	26.6	22.7		51.4	21.9	67.7	30.5	29.7		101.6	33.0
Level of Service	D	C	C		D	C	E	C	C		F	C
Approach Delay (s)		31.6			49.5			30.5				38.6
Approach LOS		C			D			C				D

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	85.6	Sum of lost time (s)	17.9
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	38
Future Volume (vph)	38
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	41
RTOR Reduction (vph)	32
Lane Group Flow (vph)	9
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	19.0
Effective Green, g (s)	19.0
Actuated g/C Ratio	0.22
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	341
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.03
Uniform Delay, d1	26.1
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	26.1
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	14	174	4	21	156	14	1	6	29	16	9	0
Future Vol, veh/h	14	174	4	21	156	14	1	6	29	16	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	189	4	23	170	15	1	7	32	17	10	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	185	0	0	193	0	0	450	452	191	465	447	178
Stage 1	-	-	-	-	-	-	221	221	-	224	224	-
Stage 2	-	-	-	-	-	-	229	231	-	241	223	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1384	-	-	1374	-	-	518	502	848	506	505	862
Stage 1	-	-	-	-	-	-	779	719	-	776	716	-
Stage 2	-	-	-	-	-	-	772	711	-	760	717	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1374	-	-	498	486	848	471	489	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	498	486	-	471	489	-
Stage 1	-	-	-	-	-	-	770	710	-	767	702	-
Stage 2	-	-	-	-	-	-	747	697	-	716	708	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.8	10.1	13
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	741	1384	-	-	1374	-	-	477
HCM Lane V/C Ratio	0.053	0.011	-	-	0.017	-	-	0.057
HCM Control Delay (s)	10.1	7.6	0	-	7.7	0	-	13
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	433	40	0	594	62	0
Future Vol, veh/h	433	40	0	594	62	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	250	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	471	43	0	646	67	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	514	0	1139	493
Stage 1	-	-	-	-	493	-
Stage 2	-	-	-	-	646	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1046	-	222	574
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	520	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1046	-	222	574
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	520	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	28.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	222	-	-	-	1046	-
HCM Lane V/C Ratio	0.304	-	-	-	-	-
HCM Control Delay (s)	28.1	0	-	-	0	-
HCM Lane LOS	D	A	-	-	A	-
HCM 95th %tile Q(veh)	1.2	-	-	-	0	-



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	22	386	25	147	242	562	238	26	44	114	189	19
Future Volume (vph)	22	386	25	147	242	562	238	26	44	114	189	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.96		1.00	0.89		1.00	0.96
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1568		1752	3326		1752	1645		1752	1775
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1568		1752	3326		1752	1645		1752	1775
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	420	27	160	263	611	259	28	48	124	205	21
RTOR Reduction (vph)	0	0	21	0	0	36	0	0	100	0	0	5
Lane Group Flow (vph)	24	420	6	0	423	834	0	28	72	0	205	23
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	NA		Prot	NA
Protected Phases	7	4		3	3	8		5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	2.0	18.2	18.2		26.4	42.6		2.1	14.2		13.1	25.2
Effective Green, g (s)	2.0	18.2	18.2		26.4	42.6		2.1	14.2		13.1	25.2
Actuated g/C Ratio	0.02	0.21	0.21		0.30	0.48		0.02	0.16		0.15	0.28
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	39	719	321		521	1597		41	263		258	504
v/s Ratio Prot	0.01	0.12			c0.24	c0.25		0.02	c0.04		c0.12	0.01
v/s Ratio Perm			0.00									
v/c Ratio	0.62	0.58	0.02		0.81	0.52		0.68	0.27		0.79	0.05
Uniform Delay, d1	43.0	31.8	28.1		28.9	16.0		43.0	32.7		36.5	23.0
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	25.5	1.2	0.0		9.3	0.3		37.9	0.6		15.4	0.0
Delay (s)	68.5	33.0	28.1		38.2	16.3		80.9	33.3		51.9	23.1
Level of Service	E	C	C		D	B		F	C		D	C
Approach Delay (s)		34.6				23.5			40.0			48.4
Approach LOS		C				C			D			D

Intersection Summary			
HCM 2000 Control Delay	30.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	16.8
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	6
Future Volume (vph)	6
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	7
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

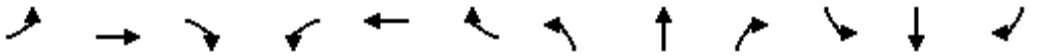
Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	846	3	0	1187	0	72
Future Vol, veh/h	846	3	0	1187	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	920	3	0	1290	0	78

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	462
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	-	-	0	-	0	544
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	544
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

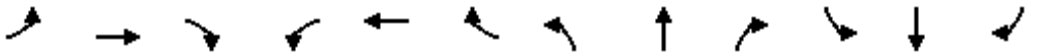
Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	544	-	-	-
HCM Lane V/C Ratio	0.144	-	-	-
HCM Control Delay (s)	12.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	869	49	54	942	0	0	0	51	185	23	245
Future Volume (vph)	0	869	49	54	942	0	0	0	51	185	23	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1827	1553
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1827	1553
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	934	53	58	1013	0	0	0	55	199	25	263
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	50	0	0	104
Lane Group Flow (vph)	0	934	33	58	1013	0	0	0	5	199	25	159
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		88.1	88.1	8.1	101.9				13.2	14.4	25.6	25.6
Effective Green, g (s)		88.1	88.1	8.1	101.9				13.2	14.4	25.6	25.6
Actuated g/C Ratio		0.63	0.63	0.06	0.73				0.09	0.10	0.18	0.18
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		2184	977	100	2526				148	346	334	283
v/s Ratio Prot		c0.27		c0.03	0.29				0.00	0.06	0.01	
v/s Ratio Perm			0.02									c0.10
v/c Ratio		0.43	0.03	0.58	0.40				0.04	0.58	0.07	0.56
Uniform Delay, d1		13.2	9.8	64.3	7.3				57.6	59.9	47.4	52.1
Progression Factor		1.00	1.00	1.25	0.39				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6	0.1	3.8	0.4				0.0	4.1	0.2	4.7
Delay (s)		13.8	9.9	84.5	3.3				57.6	64.0	47.6	56.8
Level of Service		B	A	F	A				E	E	D	E
Approach Delay (s)		13.6			7.7			57.6			59.3	
Approach LOS		B			A			E			E	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	778	177	250	906	145	94	271	107	53	386	340
Future Volume (veh/h)	270	778	177	250	906	145	94	271	107	53	386	340
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	276	794	181	255	924	148	96	277	109	54	394	347
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	263	1794	800	301	1363	218	113	614	273	69	636	500
Arrive On Green	0.20	0.68	0.68	0.18	0.90	0.90	0.07	0.35	0.35	0.04	0.18	0.18
Sat Flow, veh/h	1767	3526	1572	3428	3043	487	3428	3526	1567	1767	3526	2768
Grp Volume(v), veh/h	276	794	181	255	535	537	96	277	109	54	394	347
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1767	1714	1763	1567	1767	1763	1384
Q Serve(g_s), s	20.8	14.6	6.2	10.1	11.2	11.3	3.9	8.5	7.4	4.2	14.4	16.4
Cycle Q Clear(g_c), s	20.8	14.6	6.2	10.1	11.2	11.3	3.9	8.5	7.4	4.2	14.4	16.4
Prop In Lane	1.00		1.00	1.00		0.28	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	263	1794	800	301	790	792	113	614	273	69	636	500
V/C Ratio(X)	1.05	0.44	0.23	0.85	0.68	0.68	0.85	0.45	0.40	0.78	0.62	0.69
Avail Cap(c_a), veh/h	263	1794	800	414	790	792	113	823	366	125	957	751
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	0.79	0.79	0.79	0.82	0.82	0.82	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	13.5	12.1	56.8	4.6	4.6	65.1	40.4	40.1	66.7	52.9	53.7
Incr Delay (d2), s/veh	66.8	0.7	0.6	6.9	3.7	3.7	35.8	0.7	1.3	6.9	1.7	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	5.2	2.2	4.3	2.8	2.8	2.2	3.4	2.8	2.0	6.5	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	122.9	14.2	12.7	63.7	8.3	8.3	100.8	41.2	41.4	73.6	54.6	56.7
LnGrp LOS	F	B	B	E	A	A	F	D	D	E	D	E
Approach Vol, veh/h		1251			1327			482			795	
Approach Delay, s/veh		38.0			18.9			53.1			56.8	
Approach LOS		D			B			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	30.5	18.9	78.5	11.2	31.4	27.4	70.0
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 9.9	32.7	* 17	* 54	* 4.6	38.0	* 21	* 50
Max Q Clear Time (g_c+I1), s	6.2	10.5	12.1	16.6	5.9	18.4	22.8	13.3
Green Ext Time (p_c), s	0.0	3.2	0.2	11.6	0.0	6.3	0.0	13.6

Intersection Summary	
HCM 6th Ctrl Delay	37.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	670	0	0	933	396	77
Future Volume (vph)	670	0	0	933	396	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	728	0	0	1014	430	84
RTOR Reduction (vph)	0	0	0	0	0	16
Lane Group Flow (vph)	728	0	0	1014	430	68
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	85.1			85.1	42.7	42.7
Effective Green, g (s)	85.1			85.1	42.7	42.7
Actuated g/C Ratio	0.61			0.61	0.31	0.31
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2130			2130	534	478
v/s Ratio Prot	0.21			c0.29	c0.25	
v/s Ratio Perm						0.04
v/c Ratio	0.34			0.48	0.81	0.14
Uniform Delay, d1	13.6			15.1	44.8	35.3
Progression Factor	0.28			1.00	1.00	1.00
Incremental Delay, d2	0.4			0.8	9.8	0.3
Delay (s)	4.3			15.9	54.6	35.6
Level of Service	A			B	D	D
Approach Delay (s)	4.3			15.9	51.5	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	4	25	473	146	78	707	78	4	112	210	10	4
Future Volume (vph)	4	25	473	146	78	707	78	4	112	210	10	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.96		1.00	0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3381		1752	3448			1752	3505	1545	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3381		1752	3448			1752	3505	1545	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	27	514	159	85	768	85	4	122	228	11	4
RTOR Reduction (vph)	0	0	32	0	0	8	0	0	0	0	9	0
Lane Group Flow (vph)	0	31	641	0	85	845	0	0	126	228	2	0
Confl. Peds. (#/hr)							4				4	
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		1.3	24.4		5.1	27.8			6.1	15.7	15.7	
Effective Green, g (s)		1.3	24.4		5.1	27.8			6.1	15.7	15.7	
Actuated g/C Ratio		0.02	0.35		0.07	0.40			0.09	0.23	0.23	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		32	1190		128	1383			154	794	350	
v/s Ratio Prot		0.02	0.19		c0.05	c0.24			c0.07	0.07		
v/s Ratio Perm											0.00	
v/c Ratio		0.97	0.54		0.66	0.61			0.82	0.29	0.01	
Uniform Delay, d1		34.0	18.0		31.3	16.5			31.1	22.2	20.8	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		144.6	0.5		12.2	0.8			27.4	0.2	0.0	
Delay (s)		178.6	18.4		43.5	17.3			58.5	22.4	20.8	
Level of Service		F	B		D	B			E	C	C	
Approach Delay (s)			25.5			19.6				34.8		
Approach LOS			C			B				C		

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	17.2
Intersection Capacity Utilization	59.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	179	441	25
Future Volume (vph)	179	441	25
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1568
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1568
Peak-hour factor, PHF	0.92	0.92	0.92
Adj. Flow (vph)	195	479	27
RTOR Reduction (vph)	0	0	20
Lane Group Flow (vph)	199	479	7
Confl. Peds. (#/hr)			
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	7.3	16.9	16.9
Effective Green, g (s)	7.3	16.9	16.9
Actuated g/C Ratio	0.11	0.24	0.24
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	358	854	382
v/s Ratio Prot	0.06	c0.14	
v/s Ratio Perm			0.00
v/c Ratio	0.56	0.56	0.02
Uniform Delay, d1	29.5	22.9	19.9
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.8	0.0
Delay (s)	31.3	23.8	19.9
Level of Service	C	C	B
Approach Delay (s)		25.8	
Approach LOS		C	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	892	51	374	394	0	0	432
Future Volume (vph)	0	0	0	892	51	374	394	0	0	432
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3282	1468	1641	3282			2584
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3282	1468	1641	3282			2584
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	939	54	394	415	0	0	455
RTOR Reduction (vph)	0	0	0	0	26	0	0	0	0	254
Lane Group Flow (vph)	0	0	0	939	28	394	415	0	0	202
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				36.4	36.4	21.1	22.5			31.0
Effective Green, g (s)				36.4	36.4	21.1	22.5			31.0
Actuated g/C Ratio				0.52	0.52	0.30	0.32			0.44
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1706	763	494	1054			1144
v/s Ratio Prot				c0.29		c0.24	0.13			0.08
v/s Ratio Perm					0.02					
v/c Ratio				0.55	0.04	0.80	0.39			0.18
Uniform Delay, d1				11.3	8.2	22.5	18.5			11.8
Progression Factor				1.06	1.32	0.76	0.83			1.00
Incremental Delay, d2				1.2	0.1	7.5	1.0			0.2
Delay (s)				13.1	10.9	24.5	16.3			12.0
Level of Service				B	B	C	B			B
Approach Delay (s)	0.0			13.0			20.3		12.0	
Approach LOS	A			B			C		B	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

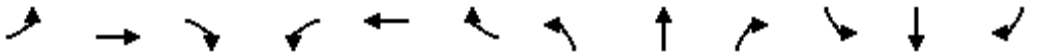
Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	70	67	53	84	5
Future Vol, veh/h	1	70	67	53	84	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	76	73	58	91	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	131	0	-	0	180	102
Stage 1	-	-	-	-	102	-
Stage 2	-	-	-	-	78	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1448	-	-	-	807	950
Stage 1	-	-	-	-	920	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1448	-	-	-	806	950
Mov Cap-2 Maneuver	-	-	-	-	806	-
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	943	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1448	-	-	-	813
HCM Lane V/C Ratio	0.001	-	-	-	0.119
HCM Control Delay (s)	7.5	0	-	-	10
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	20	119	20	11	45	125	827	57	68	652	107
Future Volume (veh/h)	84	20	119	20	11	45	125	827	57	68	652	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781	1781
Adj Flow Rate, veh/h	86	20	121	20	11	46	128	844	58	69	665	109
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	8	8	8	8	8	8	8	8	8	8	8
Cap, veh/h	128	180	152	26	138	117	174	2104	145	107	2148	1686
Arrive On Green	0.04	0.10	0.10	0.02	0.08	0.08	0.05	0.65	0.65	0.06	1.00	1.00
Sat Flow, veh/h	3291	1781	1510	1697	1781	1510	3291	3213	221	3291	3385	2657
Grp Volume(v), veh/h	86	20	121	20	11	46	128	444	458	69	665	109
Grp Sat Flow(s),veh/h/ln	1646	1781	1510	1697	1781	1510	1646	1692	1742	1646	1692	1329
Q Serve(g_s), s	3.6	1.4	11.0	1.6	0.8	4.1	5.4	17.2	17.2	2.9	0.0	0.0
Cycle Q Clear(g_c), s	3.6	1.4	11.0	1.6	0.8	4.1	5.4	17.2	17.2	2.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	128	180	152	26	138	117	174	1108	1140	107	2148	1686
V/C Ratio(X)	0.67	0.11	0.79	0.76	0.08	0.39	0.74	0.40	0.40	0.65	0.31	0.06
Avail Cap(c_a), veh/h	183	568	481	75	547	464	268	1108	1140	174	2148	1686
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	66.4	57.2	61.5	68.7	59.9	61.4	65.4	11.3	11.3	64.7	0.0	0.0
Incr Delay (d2), s/veh	2.3	0.6	18.5	15.5	0.4	3.3	2.3	1.1	1.1	2.3	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.7	5.0	0.8	0.4	1.7	2.3	6.3	6.5	1.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.7	57.8	80.0	84.2	60.3	64.7	67.7	12.4	12.4	67.0	0.4	0.1
LnGrp LOS	E	E	F	F	E	E	E	B	B	E	A	A
Approach Vol, veh/h		227			77			1030			843	
Approach Delay, s/veh		73.8			69.1			19.3			5.8	
Approach LOS		E			E			B			A	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	98.1	9.4	21.4	14.0	95.2	12.6	18.1
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 7.4	54.3	* 6.2	* 45	* 11	50.3	* 7.8	* 43
Max Q Clear Time (g_c+I1), s	4.9	19.2	3.6	13.0	7.4	2.0	5.6	6.1
Green Ext Time (p_c), s	0.0	15.6	0.0	1.2	0.1	13.7	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	16.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	10	23	44	2	130	19	780	43	103	574	35
Future Vol, veh/h	41	10	23	44	2	130	19	780	43	103	574	35
Conflicting Peds, #/hr	1	0	0	0	0	1	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	9	9	9	9	9	9	9	9	9	9	9	9
Mvmt Flow	44	11	24	47	2	138	20	830	46	110	611	37

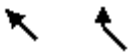
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1308	1767	325	1424	1762	439	649	0	0	876	0	0
Stage 1	851	851	-	893	893	-	-	-	-	-	-	-
Stage 2	457	916	-	531	869	-	-	-	-	-	-	-
Critical Hdwy	7.68	6.68	7.08	7.68	6.68	7.08	4.28	-	-	4.28	-	-
Critical Hdwy Stg 1	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.68	5.68	-	6.68	5.68	-	-	-	-	-	-	-
Follow-up Hdwy	3.59	4.09	3.39	3.59	4.09	3.39	2.29	-	-	2.29	-	-
Pot Cap-1 Maneuver	110	77	651	90	77	547	887	-	-	724	-	-
Stage 1	307	359	-	289	342	-	-	-	-	-	-	-
Stage 2	535	334	-	482	352	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	70	64	651	66	64	547	886	-	-	724	-	-
Mov Cap-2 Maneuver	70	64	-	66	64	-	-	-	-	-	-	-
Stage 1	300	304	-	282	334	-	-	-	-	-	-	-
Stage 2	388	326	-	380	298	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	108.9	115.9	0.2	1.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	886	-	-	69	651	188	724	-	-
HCM Lane V/C Ratio	0.023	-	-	0.786	0.038	0.996	0.151	-	-
HCM Control Delay (s)	9.2	-	-	153.2	10.7	115.9	10.9	-	-
HCM Lane LOS	A	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.7	0.1	8.3	0.5	-	-

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	357	597	47	55	530	8	1	33	496	457	3	23
Future Volume (vph)	357	597	47	55	530	8	1	33	496	457	3	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00		1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00		1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85		1.00	0.85		1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00		1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548		1836	1568		1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00		1.00	1.00		0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548		1836	1568		1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	384	642	51	59	570	9	1	35	533	491	3	25
RTOR Reduction (vph)	0	0	34	0	0	6	0	0	0	198	0	0
Lane Group Flow (vph)	384	642	17	0	629	3	0	36	533	293	0	28
Confl. Peds. (#/hr)			1	1								
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	2	2		6	6		7	7	4		3	3
Permitted Phases			2			6				4		
Actuated Green, G (s)	39.0	39.0	39.0		38.1	38.1		3.9	21.1	21.1		2.3
Effective Green, g (s)	39.0	39.0	39.0		38.1	38.1		3.9	21.1	21.1		2.3
Actuated g/C Ratio	0.33	0.33	0.33		0.32	0.32		0.03	0.18	0.18		0.02
Clearance Time (s)	4.6	4.6	4.6		4.9	4.9		4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	577	607	509		590	504		57	624	279		34
v/s Ratio Prot	0.22	c0.35			c0.34			c0.02	0.15			0.02
v/s Ratio Perm			0.01			0.00				c0.19		
v/c Ratio	0.67	1.06	0.03		1.07	0.01		0.63	0.85	1.05		0.82
Uniform Delay, d1	34.1	39.7	26.9		40.2	27.3		56.5	47.2	48.7		57.8
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00
Incremental Delay, d2	2.9	52.7	0.0		55.9	0.0		20.6	11.0	67.6		85.0
Delay (s)	37.0	92.4	26.9		96.1	27.3		77.1	58.2	116.2		142.8
Level of Service	D	F	C		F	C		E	E	F		F
Approach Delay (s)		69.6			95.1				85.7			
Approach LOS		E			F				F			

Intersection Summary			
HCM 2000 Control Delay	77.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	118.4	Sum of lost time (s)	17.9
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	297	76
Future Volume (vph)	297	76
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	319	82
RTOR Reduction (vph)	0	68
Lane Group Flow (vph)	319	14
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	19.5	19.5
Effective Green, g (s)	19.5	19.5
Actuated g/C Ratio	0.16	0.16
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	577	258
v/s Ratio Prot	0.09	
v/s Ratio Perm		0.01
v/c Ratio	0.55	0.05
Uniform Delay, d1	45.4	41.7
Progression Factor	1.00	1.00
Incremental Delay, d2	1.2	0.1
Delay (s)	46.6	41.7
Level of Service	D	D
Approach Delay (s)	51.9	
Approach LOS	D	

Intersection Summary

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	328	12	215	349	26	7	5	289	21	13	2
Future Vol, veh/h	0	328	12	215	349	26	7	5	289	21	13	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	357	13	234	379	28	8	5	314	23	14	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	407	0	0	370	0	0	1233	1239	364	1384	1231	393
Stage 1	-	-	-	-	-	-	364	364	-	861	861	-
Stage 2	-	-	-	-	-	-	869	875	-	523	370	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1146	-	-	1183	-	-	153	175	679	120	177	654
Stage 1	-	-	-	-	-	-	653	622	-	349	371	-
Stage 2	-	-	-	-	-	-	345	366	-	535	618	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1146	-	-	1183	-	-	113	130	679	50	132	654
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	130	-	50	132	-
Stage 1	-	-	-	-	-	-	653	622	-	349	276	-
Stage 2	-	-	-	-	-	-	242	272	-	285	618	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.2	19.4	110.8
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	572	1146	-	-	1183	-	-	69
HCM Lane V/C Ratio	0.572	-	-	-	0.198	-	-	0.567
HCM Control Delay (s)	19.4	0	-	-	8.8	0	-	110.8
HCM Lane LOS	C	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	3.6	0	-	-	0.7	-	-	2.4

Intersection	
Int Delay, s/veh	83.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1132	132	0	1238	109	0
Future Vol, veh/h	1132	132	0	1238	109	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	250	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1230	143	0	1346	118	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1373	0	2648	1302
Stage 1	-	-	-	-	1302	-
Stage 2	-	-	-	-	1346	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	497	-	~ 25	195
Stage 1	-	-	-	-	253	-
Stage 2	-	-	-	-	241	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	497	-	~ 25	195
Mov Cap-2 Maneuver	-	-	-	-	~ 25	-
Stage 1	-	-	-	-	253	-
Stage 2	-	-	-	-	241	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	$ 1997.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	25	-	-	-	497	-
HCM Lane V/C Ratio	4.739	-	-	-	-	-
HCM Control Delay (s)	$ 1997.7	0	-	-	0	-
HCM Lane LOS	F	A	-	-	A	-
HCM 95th %tile Q(veh)	14.7	-	-	-	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	1077	23	129	157	1202	400	14	36	67	417	60
Future Volume (vph)	32	1077	23	129	157	1202	400	14	36	67	417	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.96		1.00	0.90		1.00	0.96
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (prot)	1752	3505	1568		1752	3355		1752	1664		1752	1771
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	1.00
Satd. Flow (perm)	1752	3505	1568		1752	3355		1752	1664		1752	1771
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	1134	24	136	165	1265	421	15	38	71	439	63
RTOR Reduction (vph)	0	0	15	0	0	23	0	0	48	0	0	12
Lane Group Flow (vph)	34	1134	9	0	301	1663	0	15	61	0	439	74
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Prot	NA		Prot	NA
Protected Phases	7	4		3	3	8		5	2		1	6
Permitted Phases			4									
Actuated Green, G (s)	2.3	37.7	37.7		14.9	50.3		0.9	15.4		21.0	35.5
Effective Green, g (s)	2.3	37.7	37.7		14.9	50.3		0.9	15.4		21.0	35.5
Actuated g/C Ratio	0.02	0.36	0.36		0.14	0.48		0.01	0.15		0.20	0.34
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	38	1248	558		246	1595		14	242		347	594
v/s Ratio Prot	0.02	0.32			c0.17	c0.50		0.01	c0.04		c0.25	0.04
v/s Ratio Perm			0.01									
v/c Ratio	0.89	0.91	0.02		1.22	1.04		1.07	0.25		1.27	0.12
Uniform Delay, d1	51.6	32.4	22.0		45.4	27.8		52.4	40.1		42.4	24.4
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	103.9	9.7	0.0		131.3	34.5		265.6	0.6		140.3	0.1
Delay (s)	155.5	42.2	22.0		176.7	62.3		318.0	40.6		182.7	24.5
Level of Service	F	D	C		F	E		F	D		F	C
Approach Delay (s)		45.0				79.6			74.2			156.8
Approach LOS		D				E			E			F

Intersection Summary			
HCM 2000 Control Delay	79.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	105.8	Sum of lost time (s)	16.8
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	22
Future Volume (vph)	22
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	23
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary

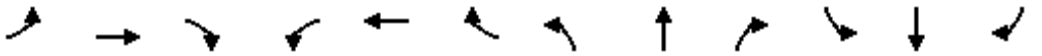
Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1846	2	0	1976	0	45
Future Vol, veh/h	1846	2	0	1976	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	2007	2	0	2148	0	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	1005
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.33
Pot Cap-1 Maneuver	-	-	0	-	0	238
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	238
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

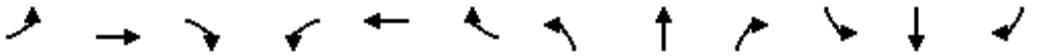
Approach	EB	WB	NB
HCM Control Delay, s	0	0	24
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	238	-	-	-
HCM Lane V/C Ratio	0.206	-	-	-
HCM Control Delay (s)	24	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.8	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1774	117	112	1409	0	0	0	137	242	41	567
Future Volume (vph)	0	1774	117	112	1409	0	0	0	137	242	41	567
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	1.00	1.00
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1845	1547
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1845	1547
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1928	127	122	1532	0	0	0	149	263	45	616
RTOR Reduction (vph)	0	0	56	0	0	0	0	0	67	0	0	51
Lane Group Flow (vph)	0	1928	71	122	1532	0	0	0	82	263	45	565
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		70.2	70.2	8.3	84.2				18.7	26.8	43.3	43.3
Effective Green, g (s)		70.2	70.2	8.3	84.2				18.7	26.8	43.3	43.3
Actuated g/C Ratio		0.50	0.50	0.06	0.60				0.13	0.19	0.31	0.31
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		1757	786	103	2108				213	650	570	478
v/s Ratio Prot		c0.55		c0.07	0.44				0.05	0.08	0.02	
v/s Ratio Perm			0.05									c0.37
v/c Ratio		1.10	0.09	1.18	0.73				0.39	0.40	0.08	1.18
Uniform Delay, d1		34.9	18.2	65.8	19.8				55.4	49.6	34.2	48.4
Progression Factor		1.00	1.00	0.94	0.93				1.00	1.00	1.00	1.00
Incremental Delay, d2		53.3	0.2	126.8	1.3				0.4	1.0	0.1	101.5
Delay (s)		88.2	18.4	189.0	19.8				55.8	50.6	34.4	149.9
Level of Service		F	B	F	B				E	D	C	F
Approach Delay (s)		83.9			32.3			55.8			116.0	
Approach LOS		F			C			E			F	

Intersection Summary			
HCM 2000 Control Delay	71.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	570	1351	250	256	996	174	107	386	130	83	414	603
Future Volume (veh/h)	570	1351	250	256	996	174	107	386	130	83	414	603
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	606	1437	266	272	1060	185	114	411	138	88	440	641
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	258	1536	685	284	1119	195	108	810	361	109	917	720
Arrive On Green	0.29	0.87	0.87	0.17	0.75	0.75	0.01	0.08	0.08	0.06	0.26	0.26
Sat Flow, veh/h	1767	3526	1572	3428	3001	523	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	606	1437	266	272	622	623	114	411	138	88	440	641
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1714	1763	1761	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	20.4	39.7	4.6	11.0	42.6	43.2	4.4	15.7	11.7	6.9	14.8	31.2
Cycle Q Clear(g_c), s	20.4	39.7	4.6	11.0	42.6	43.2	4.4	15.7	11.7	6.9	14.8	31.2
Prop In Lane	1.00		1.00	1.00		0.30	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	258	1536	685	284	657	656	108	810	361	109	917	720
V/C Ratio(X)	2.35	0.94	0.39	0.96	0.95	0.95	1.06	0.51	0.38	0.81	0.48	0.89
Avail Cap(c_a), veh/h	258	1536	685	284	657	656	108	810	361	172	957	751
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.13	0.13	0.13	0.82	0.82	0.82	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	7.6	5.4	58.2	16.6	16.7	69.3	57.1	55.2	64.9	43.8	49.9
Incr Delay (d2), s/veh	610.6	2.1	0.2	36.9	21.1	21.7	92.9	0.7	0.9	6.7	0.7	13.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	51.6	3.9	1.2	5.8	12.5	12.8	3.3	7.5	5.1	3.3	6.5	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	660.2	9.7	5.6	95.0	37.6	38.3	162.2	57.7	56.1	71.5	44.5	63.0
LnGrp LOS	F	A	A	F	D	D	F	E	E	E	D	E
Approach Vol, veh/h		2309			1517			663			1169	
Approach Delay, s/veh		180.0			48.2			75.4			56.7	
Approach LOS		F			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	38.3	18.2	68.3	11.0	42.5	27.0	59.5
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 14	28.8	* 12	* 59	* 4.4	38.0	* 20	* 51
Max Q Clear Time (g_c+I1), s	8.9	17.7	13.0	41.7	6.4	33.2	22.4	45.2
Green Ext Time (p_c), s	0.0	3.4	0.0	13.8	0.0	3.2	0.0	4.2

Intersection Summary	
HCM 6th Ctrl Delay	106.9
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1092	0	0	1049	338	205
Future Volume (vph)	1092	0	0	1049	338	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	6.1
Lane Util. Factor	0.95			0.95	1.00	1.00
Frt	1.00			1.00	1.00	0.85
Flt Protected	1.00			1.00	0.95	1.00
Satd. Flow (prot)	3505			3505	1752	1568
Flt Permitted	1.00			1.00	0.95	1.00
Satd. Flow (perm)	3505			3505	1752	1568
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1138	0	0	1093	352	214
RTOR Reduction (vph)	0	0	0	0	0	48
Lane Group Flow (vph)	1138	0	0	1093	352	166
Turn Type	NA			NA	Prot	Perm
Protected Phases	2			2	8	
Permitted Phases						8
Actuated Green, G (s)	92.1			92.1	35.7	35.7
Effective Green, g (s)	92.1			92.1	35.7	35.7
Actuated g/C Ratio	0.66			0.66	0.26	0.26
Clearance Time (s)	6.1			6.1	6.1	6.1
Vehicle Extension (s)	3.8			3.8	5.1	5.1
Lane Grp Cap (vph)	2305			2305	446	399
v/s Ratio Prot	c0.32			0.31	c0.20	
v/s Ratio Perm						0.11
v/c Ratio	0.49			0.47	0.79	0.42
Uniform Delay, d1	12.1			11.9	48.6	43.5
Progression Factor	0.41			1.00	1.00	1.00
Incremental Delay, d2	0.5			0.7	10.4	1.5
Delay (s)	5.5			12.6	59.1	45.0
Level of Service	A			B	E	D
Approach Delay (s)	5.5			12.6	53.7	
Approach LOS	A			B	D	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	SEU	SEL	SET	SER	NWU
Lane Configurations												
Traffic Volume (vph)	16	48	957	250	70	724	76	19	176	440	39	2
Future Volume (vph)	16	48	957	250	70	724	76	19	176	440	39	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Lane Util. Factor		1.00	0.95		1.00	0.95			1.00	0.95	1.00	
Frpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Flpb, ped/bikes		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Frt		1.00	0.97		1.00	0.99			1.00	1.00	0.85	
Flt Protected		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (prot)		1752	3396		1752	3449			1752	3505	1568	
Flt Permitted		0.95	1.00		0.95	1.00			0.95	1.00	1.00	
Satd. Flow (perm)		1752	3396		1752	3449			1752	3505	1568	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	17	51	1018	266	74	770	81	20	187	468	41	2
RTOR Reduction (vph)	0	0	19	0	0	6	0	0	0	0	33	0
Lane Group Flow (vph)	0	68	1265	0	74	845	0	0	207	468	8	0
Confl. Peds. (#/hr)							8					
Turn Type	Prot	Prot	NA		Prot	NA		Prot	Prot	NA	Perm	Prot
Protected Phases	7	7	4		3	8		1	1	6		5
Permitted Phases											6	
Actuated Green, G (s)		4.4	42.4		5.4	43.0			15.8	19.9	19.9	
Effective Green, g (s)		4.4	42.4		5.4	43.0			15.8	19.9	19.9	
Actuated g/C Ratio		0.05	0.44		0.06	0.44			0.16	0.21	0.21	
Clearance Time (s)		4.2	4.2		4.2	4.6			4.2	4.2	4.2	
Vehicle Extension (s)		3.0	3.0		3.0	3.0			3.0	3.0	3.0	
Lane Grp Cap (vph)		79	1487		97	1532			285	720	322	
v/s Ratio Prot		0.04	c0.37		c0.04	0.24			0.12	c0.13		
v/s Ratio Perm											0.01	
v/c Ratio		0.86	0.85		0.76	0.55			0.73	0.65	0.03	
Uniform Delay, d1		45.9	24.4		45.1	19.8			38.4	35.3	30.7	
Progression Factor		1.00	1.00		1.00	1.00			1.00	1.00	1.00	
Incremental Delay, d2		57.2	4.9		29.2	0.4			8.9	2.1	0.0	
Delay (s)		103.1	29.2		74.3	20.2			47.3	37.4	30.7	
Level of Service		F	C		E	C			D	D	C	
Approach Delay (s)			33.0			24.6				39.9		
Approach LOS			C			C				D		

Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	96.8	Sum of lost time (s)	17.2
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWT	NWR
Lane Configurations			
Traffic Volume (vph)	286	301	39
Future Volume (vph)	286	301	39
Ideal Flow (vphpl)	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2
Lane Util. Factor	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00
Frt	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00
Satd. Flow (prot)	3400	3505	1548
Flt Permitted	0.95	1.00	1.00
Satd. Flow (perm)	3400	3505	1548
Peak-hour factor, PHF	0.94	0.94	0.94
Adj. Flow (vph)	304	320	41
RTOR Reduction (vph)	0	0	34
Lane Group Flow (vph)	306	320	7
Confl. Peds. (#/hr)			1
Turn Type	Prot	NA	Perm
Protected Phases	5	2	
Permitted Phases			2
Actuated Green, G (s)	12.3	16.4	16.4
Effective Green, g (s)	12.3	16.4	16.4
Actuated g/C Ratio	0.13	0.17	0.17
Clearance Time (s)	4.2	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0
Lane Grp Cap (vph)	432	593	262
v/s Ratio Prot	c0.09	0.09	
v/s Ratio Perm			0.00
v/c Ratio	0.71	0.54	0.03
Uniform Delay, d1	40.5	36.7	33.5
Progression Factor	1.00	1.00	1.00
Incremental Delay, d2	5.3	0.9	0.0
Delay (s)	45.8	37.7	33.6
Level of Service	D	D	C
Approach Delay (s)		41.2	
Approach LOS		D	

Intersection Summary



Movement	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations										
Traffic Volume (vph)	0	0	0	919	79	470	432	0	0	486
Future Volume (vph)	0	0	0	919	79	470	432	0	0	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.8	6.8	5.7	6.8			9.7
Lane Util. Factor				0.95	1.00	1.00	0.95			0.88
Frpb, ped/bikes				1.00	0.98	1.00	1.00			1.00
Flpb, ped/bikes				1.00	1.00	1.00	1.00			1.00
Frt				1.00	0.85	1.00	1.00			0.85
Flt Protected				1.00	1.00	0.95	1.00			1.00
Satd. Flow (prot)				3471	1520	1736	3471			2733
Flt Permitted				1.00	1.00	0.95	1.00			1.00
Satd. Flow (perm)				3471	1520	1736	3471			2733
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	967	83	495	455	0	0	512
RTOR Reduction (vph)	0	0	0	0	44	0	0	0	0	274
Lane Group Flow (vph)	0	0	0	967	39	495	455	0	0	238
Confl. Peds. (#/hr)					1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type				NA	Perm	Prot	NA			Prot
Protected Phases				2		1	6			5
Permitted Phases					2					
Actuated Green, G (s)				33.3	33.3	24.2	20.9			32.6
Effective Green, g (s)				33.3	33.3	24.2	20.9			32.6
Actuated g/C Ratio				0.48	0.48	0.35	0.30			0.47
Clearance Time (s)				6.8	6.8	5.7	6.8			9.7
Vehicle Extension (s)				6.8	6.8	2.0	4.9			5.8
Lane Grp Cap (vph)				1651	723	600	1036			1272
v/s Ratio Prot				c0.28		c0.29	0.13			0.09
v/s Ratio Perm					0.03					
v/c Ratio				0.59	0.05	0.82	0.44			0.19
Uniform Delay, d1				13.3	9.9	21.0	19.8			10.9
Progression Factor				1.44	2.48	1.35	0.94			1.00
Incremental Delay, d2				1.4	0.1	7.3	1.1			0.2
Delay (s)				20.6	24.6	35.5	19.8			11.1
Level of Service				C	C	D	B			B
Approach Delay (s)	0.0			20.9			28.0		11.1	
Approach LOS	A			C			C		B	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

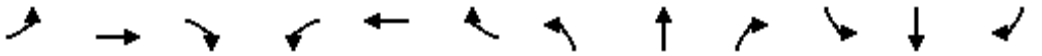
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	142	137	83	78	2
Future Vol, veh/h	5	142	137	83	78	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	154	149	90	85	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	239	0	-	0	358	194
Stage 1	-	-	-	-	194	-
Stage 2	-	-	-	-	164	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1322	-	-	-	638	845
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	863	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1322	-	-	-	635	845
Mov Cap-2 Maneuver	-	-	-	-	635	-
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	863	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1322	-	-	-	639
HCM Lane V/C Ratio	0.004	-	-	-	0.136
HCM Control Delay (s)	7.7	0	-	-	11.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.5



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	223	20	388	50	17	114	262	690	51	68	747	121
Future Volume (veh/h)	223	20	388	50	17	114	262	690	51	68	747	121
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	235	21	408	53	18	120	276	726	54	72	786	127
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	283	526	445	68	444	376	324	1493	111	113	1366	1072
Arrive On Green	0.08	0.28	0.28	0.04	0.24	0.24	0.09	0.45	0.45	0.02	0.26	0.26
Sat Flow, veh/h	3428	1856	1572	1767	1856	1571	3428	3326	247	3428	3526	2768
Grp Volume(v), veh/h	235	21	408	53	18	120	276	385	395	72	786	127
Grp Sat Flow(s),veh/h/ln	1714	1856	1572	1767	1856	1571	1714	1763	1811	1714	1763	1384
Q Serve(g_s), s	9.5	1.1	35.2	4.2	1.0	8.8	11.1	21.5	21.6	2.9	27.2	4.9
Cycle Q Clear(g_c), s	9.5	1.1	35.2	4.2	1.0	8.8	11.1	21.5	21.6	2.9	27.2	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.14	1.00		1.00
Lane Grp Cap(c), veh/h	283	526	445	68	444	376	324	791	813	113	1366	1072
V/C Ratio(X)	0.83	0.04	0.92	0.78	0.04	0.32	0.85	0.49	0.49	0.64	0.58	0.12
Avail Cap(c_a), veh/h	338	622	527	125	570	482	377	791	813	167	1366	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	63.3	36.4	48.6	66.7	40.9	43.9	62.4	27.2	27.2	67.6	41.8	33.6
Incr Delay (d2), s/veh	11.8	0.1	21.6	7.0	0.1	0.7	13.5	2.1	2.1	2.1	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.5	16.4	2.0	0.5	3.5	5.4	9.3	9.5	1.3	12.5	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.1	36.4	70.1	73.7	41.0	44.6	75.9	29.3	29.3	69.7	43.5	33.8
LnGrp LOS	E	D	E	E	D	D	E	C	C	E	D	C
Approach Vol, veh/h		664			191			1056			985	
Approach Delay, s/veh		70.8			52.3			41.5			44.1	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.2	69.2	12.6	47.0	19.8	60.6	18.8	40.8
Change Period (Y+Rc), s	* 6.6	6.4	* 7.2	* 7.3	* 6.6	6.4	* 7.2	* 7.3
Max Green Setting (Gmax), s	* 6.8	48.9	* 9.9	* 47	* 15	40.3	* 14	* 43
Max Q Clear Time (g_c+I1), s	4.9	23.6	6.2	37.2	13.1	29.2	11.5	10.8
Green Ext Time (p_c), s	0.0	11.1	0.0	2.4	0.1	7.1	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	49.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	97.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	12	21	58	7	129	19	866	66	184	934	57
Future Vol, veh/h	19	12	21	58	7	129	19	866	66	184	934	57
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Stop	-	-	None	-	-	None	-	-	None
Storage Length	-	-	25	-	-	-	250	-	-	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	19	12	21	59	7	132	19	884	67	188	953	58

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1842	2347	506	1815	2343	476	1011	0	0	951	0	0
Stage 1	1358	1358	-	956	956	-	-	-	-	-	-	-
Stage 2	484	989	-	859	1387	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	46	35	509	~ 48	35	532	675	-	-	712	-	-
Stage 1	155	213	-	275	332	-	-	-	-	-	-	-
Stage 2	530	321	-	315	207	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	21	25	509	~ 23	25	532	675	-	-	712	-	-
Mov Cap-2 Maneuver	21	25	-	~ 23	25	-	-	-	-	-	-	-
Stage 1	151	157	-	267	323	-	-	-	-	-	-	-
Stage 2	379	312	-	205	152	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 366.9	$ 1080	0.2	1.9
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	675	-	-	22	509	64	712	-	-
HCM Lane V/C Ratio	0.029	-	-	1.438	0.042	3.093	0.264	-	-
HCM Control Delay (s)	10.5	-	-	-$ 607.1	12.4	$ 1080	11.9	-	-
HCM Lane LOS	B	-	-	F	B	F	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.1	0.1	20.4	1.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWU	NWL	NWT
Lane Configurations												
Traffic Volume (vph)	327	212	19	49	389	30	6	236	349	2	48	478
Future Volume (vph)	327	212	19	49	389	30	6	236	349	2	48	478
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6	4.6	4.2	4.9		4.2	4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95	1.00		1.00	0.95
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85		1.00	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1719	1810	1538	1719	1790		1719	3438	1538		1719	3438
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1719	1810	1538	1719	1790		1719	3438	1538		1719	3438
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	355	230	21	53	423	33	7	257	379	2	52	520
RTOR Reduction (vph)	0	0	13	0	3	0	0	0	298	0	0	0
Lane Group Flow (vph)	355	230	8	53	453	0	7	257	81	0	54	520
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	Prot	NA
Protected Phases	5	2		1	6		7	4		3	3	8
Permitted Phases			2						4			
Actuated Green, G (s)	21.1	35.3	35.3	13.2	27.1		0.7	18.6	18.6		3.2	21.1
Effective Green, g (s)	21.1	35.3	35.3	13.2	27.1		0.7	18.6	18.6		3.2	21.1
Actuated g/C Ratio	0.24	0.40	0.40	0.15	0.31		0.01	0.21	0.21		0.04	0.24
Clearance Time (s)	4.2	4.6	4.6	4.2	4.9		4.2	4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	414	730	620	259	554		13	730	326		62	829
v/s Ratio Prot	c0.21	0.13		0.03	c0.25		0.00	0.07			c0.03	c0.15
v/s Ratio Perm			0.01						0.05			
v/c Ratio	0.86	0.32	0.01	0.20	0.82		0.54	0.35	0.25		0.87	0.63
Uniform Delay, d1	31.8	17.8	15.7	32.6	27.9		43.2	29.3	28.6		41.9	29.7
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	15.9	0.2	0.0	0.4	9.1		36.8	0.3	0.4		70.2	1.5
Delay (s)	47.7	18.1	15.7	32.9	37.1		80.0	29.6	29.0		112.2	31.2
Level of Service	D	B	B	C	D		F	C	C		F	C
Approach Delay (s)		35.3			36.6			29.8				37.9
Approach LOS		D			D			C				D

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	17.5
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWR
Lane Configurations	
Traffic Volume (vph)	38
Future Volume (vph)	38
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.2
Lane Util. Factor	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1538
Flt Permitted	1.00
Satd. Flow (perm)	1538
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	41
RTOR Reduction (vph)	31
Lane Group Flow (vph)	10
Heavy Vehicles (%)	5%
Turn Type	Perm
Protected Phases	
Permitted Phases	8
Actuated Green, G (s)	21.1
Effective Green, g (s)	21.1
Actuated g/C Ratio	0.24
Clearance Time (s)	4.2
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	370
v/s Ratio Prot	
v/s Ratio Perm	0.01
v/c Ratio	0.03
Uniform Delay, d1	25.4
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	25.4
Level of Service	C
Approach Delay (s)	
Approach LOS	

Intersection Summary

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	174	4	21	156	14	1	6	29	16	9	0
Future Vol, veh/h	14	174	4	21	156	14	1	6	29	16	9	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	189	4	23	170	15	1	7	32	17	10	0
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	9	9	7.7	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	3%	7%	100%	0%	64%
Vol Thru, %	17%	91%	0%	92%	36%
Vol Right, %	81%	2%	0%	8%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	192	21	170	25
LT Vol	1	14	21	0	16
Through Vol	6	174	0	156	9
RT Vol	29	4	0	14	0
Lane Flow Rate	39	209	23	185	27
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.049	0.257	0.034	0.247	0.038
Departure Headway (Hd)	4.47	4.441	5.378	4.818	5.091
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	802	810	670	750	704
Service Time	2.493	2.458	3.078	2.518	3.116
HCM Lane V/C Ratio	0.049	0.258	0.034	0.247	0.038
HCM Control Delay	7.7	9	8.3	9.1	8.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	1	0.1	1	0.1



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	433	40	0	594	62	0
Future Volume (veh/h)	433	40	0	594	62	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	471	43	0	646	67	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1390	620	0	1390	329	293
Arrive On Green	0.39	0.39	0.00	0.39	0.19	0.00
Sat Flow, veh/h	3618	1572	0	3711	1767	1572
Grp Volume(v), veh/h	471	43	0	646	67	0
Grp Sat Flow(s),veh/h/ln	1763	1572	0	1763	1767	1572
Q Serve(g_s), s	2.0	0.4	0.0	2.9	0.7	0.0
Cycle Q Clear(g_c), s	2.0	0.4	0.0	2.9	0.7	0.0
Prop In Lane		1.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	1390	620	0	1390	329	293
V/C Ratio(X)	0.34	0.07	0.00	0.46	0.20	0.00
Avail Cap(c_a), veh/h	3860	1722	0	3860	2264	2015
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.5	4.0	0.0	4.8	7.4	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.7	4.1	0.0	5.1	7.7	0.0
LnGrp LOS	A	A	A	A	A	A
Approach Vol, veh/h	514			646	67	
Approach Delay, s/veh	4.6			5.1	7.7	
Approach LOS	A			A	A	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	8.5	13.0	13.0
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	27.5	23.5	23.5
Max Q Clear Time (g_c+I1), s	2.7	4.0	4.9
Green Ext Time (p_c), s	0.1	2.6	3.6

Intersection Summary	
HCM 6th Ctrl Delay	5.0
HCM 6th LOS	A



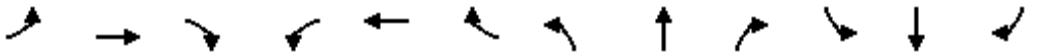
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	22	386	25	147	242	562	238	26	44	114	189	19
Future Volume (vph)	22	386	25	147	242	562	238	26	44	114	189	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.96		1.00	0.89		1.00	0.99
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	0.96
Satd. Flow (prot)	1752	3505	1568		1752	3327		1752	1645		1665	1673
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	0.96
Satd. Flow (perm)	1752	3505	1568		1752	3327		1752	1645		1665	1673
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	24	420	27	160	263	611	259	28	48	124	205	21
RTOR Reduction (vph)	0	0	21	0	0	38	0	0	91	0	0	2
Lane Group Flow (vph)	24	420	6	0	423	832	0	28	81	0	117	114
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Split	NA		Split	NA
Protected Phases	7	4		3	3	8		2	2		6	6
Permitted Phases			4									
Actuated Green, G (s)	2.0	17.4	17.4		23.4	38.8		6.0	6.0		13.0	13.0
Effective Green, g (s)	2.0	17.4	17.4		23.4	38.8		6.0	6.0		13.0	13.0
Actuated g/C Ratio	0.03	0.23	0.23		0.31	0.51		0.08	0.08		0.17	0.17
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	45	796	356		535	1685		137	128		282	283
v/s Ratio Prot	0.01	0.12			c0.24	c0.25		0.02	c0.05		c0.07	0.07
v/s Ratio Perm			0.00									
v/c Ratio	0.53	0.53	0.02		0.79	0.49		0.20	0.63		0.41	0.40
Uniform Delay, d1	36.8	26.0	23.0		24.4	12.4		33.1	34.2		28.4	28.3
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	11.6	0.6	0.0		7.8	0.2		0.7	9.7		1.0	0.9
Delay (s)	48.4	26.6	23.0		32.2	12.7		33.8	43.9		29.4	29.3
Level of Service	D	C	C		C	B		C	D		C	C
Approach Delay (s)		27.5				19.0			42.5			29.3
Approach LOS		C				B			D			C

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	76.6	Sum of lost time (s)	16.8
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



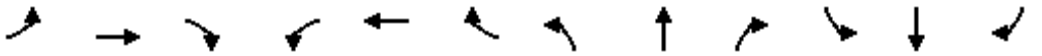
Movement	SBR
Lane Configurations	
Traffic Volume (vph)	6
Future Volume (vph)	6
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	7
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	869	49	54	942	0	0	0	51	185	23	245
Future Volume (vph)	0	869	49	54	942	0	0	0	51	185	23	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	0.95	0.95
Frt		1.00	0.85	1.00	1.00				0.86	1.00	0.88	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3471	1553	1736	3471				1580	3367	1520	1475
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3471	1553	1736	3471				1580	3367	1520	1475
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	0	934	53	58	1013	0	0	0	55	199	25	263
RTOR Reduction (vph)	0	0	20	0	0	0	0	0	50	0	99	104
Lane Group Flow (vph)	0	934	33	58	1013	0	0	0	5	199	47	38
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		88.1	88.1	8.1	101.9				13.2	14.4	25.6	25.6
Effective Green, g (s)		88.1	88.1	8.1	101.9				13.2	14.4	25.6	25.6
Actuated g/C Ratio		0.63	0.63	0.06	0.73				0.09	0.10	0.18	0.18
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		2184	977	100	2526				148	346	277	269
v/s Ratio Prot		c0.27		c0.03	0.29				0.00	c0.06	c0.03	
v/s Ratio Perm			0.02									0.03
v/c Ratio		0.43	0.03	0.58	0.40				0.04	0.58	0.17	0.14
Uniform Delay, d1		13.2	9.8	64.3	7.3				57.6	59.9	48.2	48.0
Progression Factor		1.00	1.00	1.29	0.70				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6	0.1	4.3	0.4				0.0	4.1	0.7	0.6
Delay (s)		13.8	9.9	87.2	5.6				57.6	64.0	49.0	48.6
Level of Service		B	A	F	A				E	E	D	D
Approach Delay (s)		13.6			10.0			57.6			55.0	
Approach LOS		B			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	270	778	177	250	906	145	94	271	107	53	386	340
Future Volume (veh/h)	270	778	177	250	906	145	94	271	107	53	386	340
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	276	794	181	255	924	148	96	277	109	54	394	347
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	327	1834	868	301	1808	806	108	573	255	69	601	735
Arrive On Green	0.13	0.69	0.69	0.18	1.00	1.00	0.06	0.33	0.33	0.04	0.17	0.17
Sat Flow, veh/h	3428	3526	1572	3428	3526	1572	3428	3526	1567	1767	3526	2768
Grp Volume(v), veh/h	276	794	181	255	924	148	96	277	109	54	394	347
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1714	1763	1572	1714	1763	1567	1767	1763	1384
Q Serve(g_s), s	11.0	13.9	5.5	10.1	0.0	0.0	3.9	8.8	7.6	4.2	14.6	14.7
Cycle Q Clear(g_c), s	11.0	13.9	5.5	10.1	0.0	0.0	3.9	8.8	7.6	4.2	14.6	14.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	327	1834	868	301	1808	806	108	573	255	69	601	735
V/C Ratio(X)	0.84	0.43	0.21	0.85	0.51	0.18	0.89	0.48	0.43	0.78	0.66	0.47
Avail Cap(c_a), veh/h	500	1834	868	414	1808	806	108	818	364	125	957	1015
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	0.84	0.84	0.84	0.82	0.82	0.82	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.1	12.5	9.8	56.8	0.0	0.0	65.4	42.5	42.1	66.7	54.2	43.1
Incr Delay (d2), s/veh	4.5	0.7	0.5	7.4	0.9	0.4	46.1	0.9	1.6	6.9	2.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	4.9	1.9	4.3	0.2	0.1	2.3	3.5	2.9	2.0	6.6	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.6	13.2	10.3	64.1	0.9	0.4	111.5	43.4	43.7	73.6	56.3	44.0
LnGrp LOS	E	B	B	E	A	A	F	D	D	E	E	D
Approach Vol, veh/h		1251			1327			482			795	
Approach Delay, s/veh		24.1			13.0			57.0			52.1	
Approach LOS		C			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	28.9	18.9	80.1	11.0	30.0	19.9	79.1
Change Period (Y+Rc), s	* 6.6	6.1	* 6.6	* 7.3	* 6.6	6.1	* 6.6	* 7.3
Max Green Setting (Gmax), s	* 9.9	32.5	* 17	* 54	* 4.4	38.0	* 20	* 51
Max Q Clear Time (g_c+I1), s	6.2	10.8	12.1	15.9	5.9	16.7	13.0	2.0
Green Ext Time (p_c), s	0.0	3.2	0.2	11.7	0.0	6.6	0.3	14.2

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

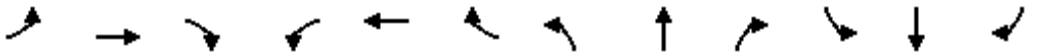
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	670	0	0	933	396	77
Future Volume (vph)	670	0	0	933	396	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	0.98	
Flt Protected	1.00			1.00	0.96	
Satd. Flow (prot)	3505			3505	3351	
Flt Permitted	1.00			1.00	0.96	
Satd. Flow (perm)	3505			3505	3351	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	728	0	0	1014	430	84
RTOR Reduction (vph)	0	0	0	0	17	0
Lane Group Flow (vph)	728	0	0	1014	497	0
Turn Type	NA			NA	Prot	
Protected Phases	2			2	8	
Permitted Phases						
Actuated Green, G (s)	99.2			99.2	28.6	
Effective Green, g (s)	99.2			99.2	28.6	
Actuated g/C Ratio	0.71			0.71	0.20	
Clearance Time (s)	6.1			6.1	6.1	
Vehicle Extension (s)	3.8			3.8	5.1	
Lane Grp Cap (vph)	2483			2483	684	
v/s Ratio Prot	0.21			c0.29	c0.15	
v/s Ratio Perm						
v/c Ratio	0.29			0.41	0.73	
Uniform Delay, d1	7.5			8.4	52.1	
Progression Factor	0.44			1.00	1.00	
Incremental Delay, d2	0.3			0.5	4.8	
Delay (s)	3.6			8.9	56.8	
Level of Service	A			A	E	
Approach Delay (s)	3.6			8.9	56.8	
Approach LOS	A			A	E	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	10	23	44	2	130	19	780	43	103	574	35
Future Volume (veh/h)	41	10	23	44	2	130	19	780	43	103	574	35
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767	1767
Adj Flow Rate, veh/h	44	11	24	47	2	138	20	830	46	110	611	37
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	9	9	9	9	9	9	9	9	9	9	9	9
Cap, veh/h	61	71	154	64	3	214	32	1158	64	138	1352	82
Arrive On Green	0.04	0.14	0.14	0.04	0.15	0.15	0.02	0.36	0.36	0.08	0.42	0.42
Sat Flow, veh/h	1682	493	1077	1682	21	1476	1682	3233	179	1682	3215	194
Grp Volume(v), veh/h	44	0	35	47	0	140	20	431	445	110	319	329
Grp Sat Flow(s),veh/h/ln	1682	0	1570	1682	0	1497	1682	1678	1734	1682	1678	1731
Q Serve(g_s), s	1.3	0.0	1.0	1.4	0.0	4.6	0.6	11.5	11.5	3.3	7.1	7.1
Cycle Q Clear(g_c), s	1.3	0.0	1.0	1.4	0.0	4.6	0.6	11.5	11.5	3.3	7.1	7.1
Prop In Lane	1.00		0.69	1.00		0.99	1.00		0.10	1.00		0.11
Lane Grp Cap(c), veh/h	61	0	225	64	0	217	32	601	621	138	706	728
V/C Ratio(X)	0.72	0.00	0.16	0.74	0.00	0.64	0.62	0.72	0.72	0.80	0.45	0.45
Avail Cap(c_a), veh/h	139	0	1036	149	0	1037	139	1036	1071	139	1036	1069
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.8	0.0	19.5	24.7	0.0	21.0	25.3	14.4	14.4	23.4	10.8	10.8
Incr Delay (d2), s/veh	14.9	0.0	0.3	15.1	0.0	3.2	17.4	1.6	1.6	27.0	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.3	0.8	0.0	1.6	0.4	3.6	3.7	2.2	2.0	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.7	0.0	19.8	39.9	0.0	24.1	42.7	16.0	16.0	50.5	11.2	11.2
LnGrp LOS	D	A	B	D	A	C	D	B	B	D	B	B
Approach Vol, veh/h		79			187			896			758	
Approach Delay, s/veh		30.9			28.1			16.6			16.9	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	23.9	6.2	13.5	5.2	27.2	6.1	13.5
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.6	34.3	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	5.3	13.5	3.4	3.0	2.6	9.1	3.3	6.6
Green Ext Time (p_c), s	0.0	4.9	0.0	0.1	0.0	3.6	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	18.4
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEU	SEL	SET	SER	NWU	NWL
Lane Configurations												
Traffic Volume (vph)	357	597	47	55	530	8	1	33	496	457	3	23
Future Volume (vph)	357	597	47	55	530	8	1	33	496	457	3	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.6	4.6	4.2	4.9			4.2	4.2	4.2		4.2
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00			1.00	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00			1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Frt	1.00	1.00	0.85	1.00	1.00			1.00	1.00	0.85		1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (prot)	1752	1845	1548	1752	1840			1752	3505	1568		1752
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00	1.00		0.95
Satd. Flow (perm)	1752	1845	1548	1752	1840			1752	3505	1568		1752
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	384	642	51	59	570	9	1	35	533	491	3	25
RTOR Reduction (vph)	0	0	26	0	1	0	0	0	0	208	0	0
Lane Group Flow (vph)	384	642	25	59	578	0	0	36	533	283	0	28
Confl. Peds. (#/hr)			1	1								
Turn Type	Prot	NA	Perm	Prot	NA		Prot	Prot	NA	Perm	Prot	Prot
Protected Phases	5	2		1	6		7	7	4		3	3
Permitted Phases			2							4		
Actuated Green, G (s)	27.0	51.3	51.3	10.5	34.5			3.6	25.6	25.6		2.1
Effective Green, g (s)	27.0	51.3	51.3	10.5	34.5			3.6	25.6	25.6		2.1
Actuated g/C Ratio	0.25	0.48	0.48	0.10	0.32			0.03	0.24	0.24		0.02
Clearance Time (s)	4.2	4.6	4.6	4.2	4.9			4.2	4.2	4.2		4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	443	887	744	172	594			59	840	376		34
v/s Ratio Prot	c0.22	0.35		0.03	c0.31			c0.02	0.15			0.02
v/s Ratio Perm			0.02							c0.18		
v/c Ratio	0.87	0.72	0.03	0.34	0.97			0.61	0.63	0.75		0.82
Uniform Delay, d1	38.1	22.1	14.6	44.9	35.7			50.9	36.4	37.6		52.1
Progression Factor	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00		1.00
Incremental Delay, d2	16.2	3.0	0.0	1.2	30.1			17.2	1.6	8.3		85.0
Delay (s)	54.3	25.0	14.6	46.1	65.8			68.1	37.9	46.0		137.1
Level of Service	D	C	B	D	E			E	D	D		F
Approach Delay (s)		35.0			63.9				42.7			
Approach LOS		C			E				D			

Intersection Summary			
HCM 2000 Control Delay	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	106.7	Sum of lost time (s)	17.5
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWT	NWR
Lane Configurations		
Traffic Volume (vph)	297	76
Future Volume (vph)	297	76
Ideal Flow (vphpl)	1900	1900
Total Lost time (s)	4.2	4.2
Lane Util. Factor	0.95	1.00
Frpb, ped/bikes	1.00	1.00
Flpb, ped/bikes	1.00	1.00
Frt	1.00	0.85
Flt Protected	1.00	1.00
Satd. Flow (prot)	3505	1568
Flt Permitted	1.00	1.00
Satd. Flow (perm)	3505	1568
Peak-hour factor, PHF	0.93	0.93
Adj. Flow (vph)	319	82
RTOR Reduction (vph)	0	63
Lane Group Flow (vph)	319	19
Confl. Peds. (#/hr)		
Turn Type	NA	Perm
Protected Phases	8	
Permitted Phases		8
Actuated Green, G (s)	24.1	24.1
Effective Green, g (s)	24.1	24.1
Actuated g/C Ratio	0.23	0.23
Clearance Time (s)	4.2	4.2
Vehicle Extension (s)	3.0	3.0
Lane Grp Cap (vph)	791	354
v/s Ratio Prot	0.09	
v/s Ratio Perm		0.01
v/c Ratio	0.40	0.05
Uniform Delay, d1	35.2	32.4
Progression Factor	1.00	1.00
Incremental Delay, d2	0.3	0.1
Delay (s)	35.5	32.4
Level of Service	D	C
Approach Delay (s)	41.6	
Approach LOS	D	

Intersection Summary

Intersection	
Intersection Delay, s/veh	18.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	328	12	215	349	26	7	5	289	21	13	2
Future Vol, veh/h	0	328	12	215	349	26	7	5	289	21	13	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	357	13	234	379	28	8	5	314	23	14	2
Number of Lanes	0	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	1
HCM Control Delay	19	19.9	15.8	11.3
HCM LOS	C	C	C	B

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	2%	0%	100%	0%	58%
Vol Thru, %	2%	96%	0%	93%	36%
Vol Right, %	96%	4%	0%	7%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	301	340	215	375	36
LT Vol	7	0	215	0	21
Through Vol	5	328	0	349	13
RT Vol	289	12	0	26	2
Lane Flow Rate	327	370	234	408	39
Geometry Grp	2	5	7	7	2
Degree of Util (X)	0.539	0.626	0.441	0.707	0.083
Departure Headway (Hd)	5.936	6.1	6.8	6.242	7.603
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	602	588	526	575	474
Service Time	4.025	4.185	4.585	4.026	5.603
HCM Lane V/C Ratio	0.543	0.629	0.445	0.71	0.082
HCM Control Delay	15.8	19	14.9	22.8	11.3
HCM Lane LOS	C	C	B	C	B
HCM 95th-tile Q	3.2	4.3	2.2	5.7	0.3



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1132	132	0	1238	109	0
Future Volume (veh/h)	1132	132	0	1238	109	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	1230	143	0	1346	118	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	2049	914	0	2049	235	209
Arrive On Green	0.58	0.58	0.00	0.58	0.13	0.00
Sat Flow, veh/h	3618	1572	0	3711	1767	1572
Grp Volume(v), veh/h	1230	143	0	1346	118	0
Grp Sat Flow(s),veh/h/ln	1763	1572	0	1763	1767	1572
Q Serve(g_s), s	7.2	1.3	0.0	8.3	2.0	0.0
Cycle Q Clear(g_c), s	7.2	1.3	0.0	8.3	2.0	0.0
Prop In Lane		1.00	0.00		1.00	1.00
Lane Grp Cap(c), veh/h	2049	914	0	2049	235	209
V/C Ratio(X)	0.60	0.16	0.00	0.66	0.50	0.00
Avail Cap(c_a), veh/h	3112	1388	0	3112	1505	1339
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.3	3.1	0.0	4.6	13.0	0.0
Incr Delay (d2), s/veh	0.3	0.1	0.0	0.4	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.6	3.2	0.0	4.9	14.6	0.0
LnGrp LOS	A	A	A	A	B	A
Approach Vol, veh/h	1373			1346	118	
Approach Delay, s/veh	4.5			4.9	14.6	
Approach LOS	A			A	B	

Timer - Assigned Phs	2	4	8
Phs Duration (G+Y+Rc), s	8.9	23.3	23.3
Change Period (Y+Rc), s	4.6	4.6	4.6
Max Green Setting (Gmax), s	27.4	28.4	28.4
Max Q Clear Time (g_c+I1), s	4.0	9.2	10.3
Green Ext Time (p_c), s	0.3	8.2	8.4

Intersection Summary	
HCM 6th Ctrl Delay	5.1
HCM 6th LOS	A



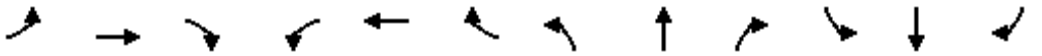
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	32	1077	23	129	157	1202	400	14	36	67	417	60
Future Volume (vph)	32	1077	23	129	157	1202	400	14	36	67	417	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Lane Util. Factor	1.00	0.95	1.00		1.00	0.95		1.00	1.00		0.95	0.95
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.96		1.00	0.90		1.00	0.99
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	0.97
Satd. Flow (prot)	1752	3505	1568		1752	3355		1752	1664		1665	1673
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95	1.00		0.95	0.97
Satd. Flow (perm)	1752	3505	1568		1752	3355		1752	1664		1665	1673
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	34	1134	24	136	165	1265	421	15	38	71	439	63
RTOR Reduction (vph)	0	0	15	0	0	24	0	0	56	0	0	3
Lane Group Flow (vph)	34	1134	9	0	301	1662	0	15	53	0	263	259
Confl. Peds. (#/hr)							1					
Turn Type	Prot	NA	Perm	Prot	Prot	NA		Split	NA		Split	NA
Protected Phases	7	4		3	3	8		2	2		6	6
Permitted Phases			4									
Actuated Green, G (s)	4.4	40.1	40.1		22.9	58.6		7.9	7.9		22.7	22.7
Effective Green, g (s)	4.4	40.1	40.1		22.9	58.6		7.9	7.9		22.7	22.7
Actuated g/C Ratio	0.04	0.36	0.36		0.21	0.53		0.07	0.07		0.21	0.21
Clearance Time (s)	4.2	4.2	4.2		4.2	4.2		4.2	4.2		4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	69	1273	569		363	1780		125	119		342	343
v/s Ratio Prot	0.02	c0.32			0.17	c0.50		0.01	c0.03		c0.16	0.15
v/s Ratio Perm			0.01									
v/c Ratio	0.49	0.89	0.02		0.83	0.93		0.12	0.45		0.77	0.75
Uniform Delay, d1	51.9	33.1	22.5		41.9	24.1		48.0	49.2		41.4	41.2
Progression Factor	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	5.4	8.2	0.0		14.4	9.6		0.4	2.7		10.0	9.1
Delay (s)	57.4	41.2	22.5		56.3	33.7		48.4	51.8		51.4	50.3
Level of Service	E	D	C		E	C		D	D		D	D
Approach Delay (s)		41.3				37.1			51.4			50.8
Approach LOS		D				D			D			D

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	16.8
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBR
Lane Configurations	
Traffic Volume (vph)	22
Future Volume (vph)	22
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.95
Adj. Flow (vph)	23
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1774	117	112	1409	0	0	0	137	242	41	567
Future Volume (vph)	0	1774	117	112	1409	0	0	0	137	242	41	567
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.8	6.8	5.7	6.8				5.7	6.1	5.7	5.7
Lane Util. Factor		0.95	1.00	1.00	0.95				1.00	0.97	0.95	0.95
Frpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	0.99	0.99
Flpb, ped/bikes		1.00	1.00	1.00	1.00				1.00	1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00				0.86	1.00	0.87	0.85
Flt Protected		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (prot)		3505	1568	1752	3505				1596	3400	1507	1470
Flt Permitted		1.00	1.00	0.95	1.00				1.00	0.95	1.00	1.00
Satd. Flow (perm)		3505	1568	1752	3505				1596	3400	1507	1470
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1928	127	122	1532	0	0	0	149	263	45	616
RTOR Reduction (vph)	0	0	51	0	0	0	0	0	64	0	44	65
Lane Group Flow (vph)	0	1928	76	122	1532	0	0	0	85	263	291	261
Confl. Peds. (#/hr)												1
Turn Type		NA	Perm	Prot	NA				pt+ov	Prot	NA	Perm
Protected Phases		2		1	6				1 8	7	4	
Permitted Phases			2						8			4
Actuated Green, G (s)		81.0	81.0	10.7	97.4				22.9	17.5	30.1	30.1
Effective Green, g (s)		81.0	81.0	10.7	97.4				22.9	17.5	30.1	30.1
Actuated g/C Ratio		0.58	0.58	0.08	0.70				0.16	0.12	0.22	0.22
Clearance Time (s)		6.8	6.8	5.7	6.8					6.1	5.7	5.7
Vehicle Extension (s)		4.9	4.9	2.0	4.4					5.5	5.5	5.5
Lane Grp Cap (vph)		2027	907	133	2438				261	425	324	316
v/s Ratio Prot		c0.55		c0.07	0.44				0.05	0.08	c0.19	
v/s Ratio Perm			0.05									0.18
v/c Ratio		0.95	0.08	0.92	0.63				0.32	0.62	0.90	0.83
Uniform Delay, d1		27.6	13.1	64.2	11.5				51.7	58.1	53.5	52.4
Progression Factor		1.00	1.00	0.84	0.40				1.00	1.00	1.00	1.00
Incremental Delay, d2		11.4	0.2	41.0	0.9				0.3	4.2	27.7	18.0
Delay (s)		39.0	13.2	94.9	5.5				52.0	62.3	81.2	70.5
Level of Service		D	B	F	A				D	E	F	E
Approach Delay (s)		37.4			12.1			52.0			72.0	
Approach LOS		D			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	35.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.3
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	570	1351	250	256	996	174	107	386	130	83	414	603
Future Volume (veh/h)	570	1351	250	256	996	174	107	386	130	83	414	603
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	606	1437	266	272	1060	185	114	411	138	88	440	641
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	857	1719	832	284	1112	495	142	523	233	162	686	1231
Arrive On Green	0.25	0.49	0.49	0.03	0.10	0.10	0.08	0.30	0.30	0.09	0.19	0.19
Sat Flow, veh/h	3428	3526	1572	3428	3526	1571	3428	3526	1572	1767	3526	2768
Grp Volume(v), veh/h	606	1437	266	272	1060	185	114	411	138	88	440	641
Grp Sat Flow(s),veh/h/ln	1714	1763	1572	1714	1763	1571	1714	1763	1572	1767	1763	1384
Q Serve(g_s), s	22.5	49.4	13.4	11.1	41.9	15.4	4.6	15.0	8.3	6.7	16.1	3.7
Cycle Q Clear(g_c), s	22.5	49.4	13.4	11.1	41.9	15.4	4.6	15.0	8.3	6.7	16.1	3.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	857	1719	832	284	1112	495	142	523	233	162	686	1231
V/C Ratio(X)	0.71	0.84	0.32	0.96	0.95	0.37	0.80	0.79	0.59	0.54	0.64	0.52
Avail Cap(c_a), veh/h	857	1719	832	284	1113	496	142	761	339	172	957	1443
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.35	0.35	0.35	0.81	0.81	0.81	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	31.0	18.7	67.8	61.7	49.8	63.6	47.2	28.9	60.8	51.9	13.0
Incr Delay (d2), s/veh	0.8	1.8	0.4	36.6	15.5	1.7	20.8	4.0	3.2	1.4	1.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	21.1	5.0	6.6	22.3	6.8	2.3	5.8	3.1	3.0	7.3	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.6	32.9	19.1	104.4	77.2	51.6	84.4	51.2	32.1	62.2	53.6	13.6
LnGrp LOS	D	C	B	F	E	D	F	D	C	E	D	B
Approach Vol, veh/h		2309			1517			663			1169	
Approach Delay, s/veh		35.4			78.9			53.0			32.3	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.4	26.9	18.2	75.6	12.4	33.8	42.3	51.4
Change Period (Y+Rc), s	6.6	* 6.1	* 6.6	* 7.3	* 6.6	* 6.6	* 7.3	* 7.3
Max Green Setting (Gmax), s	13.6	* 30	* 12	* 58	* 5.8	* 38	* 25	* 44
Max Q Clear Time (g_c+I1), s	8.7	17.0	13.1	51.4	6.6	18.1	24.5	43.9
Green Ext Time (p_c), s	0.0	3.8	0.0	5.8	0.0	9.2	0.2	0.3

Intersection Summary	
HCM 6th Ctrl Delay	48.5
HCM 6th LOS	D

Notes

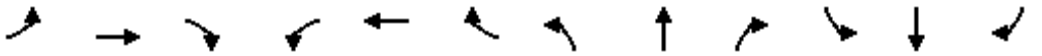
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1092	0	0	1049	338	205
Future Volume (vph)	1092	0	0	1049	338	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1			6.1	6.1	
Lane Util. Factor	0.95			0.95	0.97	
Frt	1.00			1.00	0.94	
Flt Protected	1.00			1.00	0.97	
Satd. Flow (prot)	3505			3505	3274	
Flt Permitted	1.00			1.00	0.97	
Satd. Flow (perm)	3505			3505	3274	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	1138	0	0	1093	352	214
RTOR Reduction (vph)	0	0	0	0	30	0
Lane Group Flow (vph)	1138	0	0	1093	536	0
Turn Type	NA			NA	Prot	
Protected Phases	2			2	8	
Permitted Phases						
Actuated Green, G (s)	96.9			96.9	30.9	
Effective Green, g (s)	96.9			96.9	30.9	
Actuated g/C Ratio	0.69			0.69	0.22	
Clearance Time (s)	6.1			6.1	6.1	
Vehicle Extension (s)	3.8			3.8	5.1	
Lane Grp Cap (vph)	2425			2425	722	
v/s Ratio Prot	c0.32			0.31	c0.16	
v/s Ratio Perm						
v/c Ratio	0.47			0.45	0.74	
Uniform Delay, d1	9.8			9.6	50.8	
Progression Factor	0.53			1.00	1.00	
Incremental Delay, d2	0.4			0.6	5.0	
Delay (s)	5.6			10.2	55.9	
Level of Service	A			B	E	
Approach Delay (s)	5.6			10.2	55.9	
Approach LOS	A			B	E	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	12	21	58	7	129	19	866	66	184	934	57
Future Volume (veh/h)	19	12	21	58	7	129	19	866	66	184	934	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	19	12	21	59	7	132	19	884	67	188	953	58
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	33	65	114	79	11	201	33	1240	94	150	1485	90
Arrive On Green	0.02	0.11	0.11	0.04	0.13	0.13	0.02	0.37	0.37	0.09	0.44	0.44
Sat Flow, veh/h	1767	605	1059	1767	80	1505	1767	3321	252	1767	3376	205
Grp Volume(v), veh/h	19	0	33	59	0	139	19	469	482	188	498	513
Grp Sat Flow(s),veh/h/ln	1767	0	1665	1767	0	1585	1767	1763	1810	1767	1763	1819
Q Serve(g_s), s	0.5	0.0	0.9	1.7	0.0	4.2	0.5	11.5	11.5	4.3	11.1	11.1
Cycle Q Clear(g_c), s	0.5	0.0	0.9	1.7	0.0	4.2	0.5	11.5	11.5	4.3	11.1	11.1
Prop In Lane	1.00		0.64	1.00		0.95	1.00		0.14	1.00		0.11
Lane Grp Cap(c), veh/h	33	0	179	79	0	212	33	658	676	150	775	800
V/C Ratio(X)	0.58	0.00	0.18	0.75	0.00	0.66	0.58	0.71	0.71	1.25	0.64	0.64
Avail Cap(c_a), veh/h	150	0	1139	150	0	1128	150	1119	1149	150	1119	1154
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	0.0	20.5	23.9	0.0	20.8	24.6	13.5	13.5	23.1	11.1	11.1
Incr Delay (d2), s/veh	15.2	0.0	0.5	13.2	0.0	3.4	15.2	1.5	1.4	156.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	0.9	0.0	1.6	0.3	3.6	3.7	8.0	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	0.0	21.0	37.1	0.0	24.2	39.8	15.0	14.9	179.3	12.0	11.9
LnGrp LOS	D	A	C	D	A	C	D	B	B	F	B	B
Approach Vol, veh/h		52			198			970			1199	
Approach Delay, s/veh		27.9			28.1			15.5			38.2	
Approach LOS		C			C			B			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	24.2	6.5	11.4	5.1	27.5	5.1	12.8
Change Period (Y+Rc), s	* 4.2	5.3	* 4.2	6.0	* 4.2	5.3	* 4.2	* 6
Max Green Setting (Gmax), s	* 4.3	32.1	* 4.3	34.6	* 4.3	32.1	* 4.3	* 36
Max Q Clear Time (g_c+I1), s	6.3	13.5	3.7	2.9	2.5	13.1	2.5	6.2
Green Ext Time (p_c), s	0.0	5.4	0.0	0.1	0.0	5.8	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	28.0
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	NB	B29	SB	SB	SE	SE	SE	SE	NW	NW
Directions Served	L	T	R	T	L	TR	UL	T	T	R	UL	T
Maximum Queue (ft)	368	447	51	32	270	419	13	73	192	170	72	134
Average Queue (ft)	195	138	10	1	40	228	0	19	17	56	6	48
95th Queue (ft)	346	338	33	11	146	388	4	50	76	127	29	103
Link Distance (ft)		376		1102		1299		2540	2540			1098
Upstream Blk Time (%)	0	0										
Queuing Penalty (veh)	0	3										
Storage Bay Dist (ft)	250		80		150		200			70	75	
Storage Blk Time (%)	8	12				30				5	0	4
Queuing Penalty (veh)	18	43				15				5	0	2

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NW
Directions Served	T
Maximum Queue (ft)	139
Average Queue (ft)	50
95th Queue (ft)	114
Link Distance (ft)	1098
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	73	31	68	42	31
Average Queue (ft)	39	18	35	16	12
95th Queue (ft)	59	40	52	39	32
Link Distance (ft)	2669		1937	2731	2628
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		150			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Future N-S Road & Floral Avenue

Movement	EB	EB	EB	WB	WB	NB
Directions Served	T	T	R	LT	T	L
Maximum Queue (ft)	98	96	50	136	108	67
Average Queue (ft)	43	30	10	64	27	19
95th Queue (ft)	78	65	35	119	77	47
Link Distance (ft)	1184	1184		624	624	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			250			250
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	TR	L	TR	L	LTR
Maximum Queue (ft)	88	182	180	54	286	282	294	67	125	132	153
Average Queue (ft)	19	95	81	16	183	103	140	19	58	34	79
95th Queue (ft)	54	156	144	46	285	211	261	46	100	84	140
Link Distance (ft)		624	624			380	380		335		716
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	100			100	340			100		100	
Storage Blk Time (%)	0	10	5		0	0			1	0	4
Queuing Penalty (veh)	0	2	1		0	0			0	0	4

Intersection: 5: Eastern Driveway & Floral Avenue

Movement	EB	NB
Directions Served	TR	R
Maximum Queue (ft)	29	89
Average Queue (ft)	1	34
95th Queue (ft)	10	62
Link Distance (ft)	380	293
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	TR	R
Maximum Queue (ft)	206	259	150	90	288	260	53	131	139	138	120
Average Queue (ft)	109	129	24	45	96	102	13	55	76	68	42
95th Queue (ft)	184	221	94	79	218	211	33	110	126	114	81
Link Distance (ft)	229	229			512	512	218			1827	
Upstream Blk Time (%)		1									
Queuing Penalty (veh)		4									
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		9			1						
Queuing Penalty (veh)		5			1						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	191	249	414	436	160	199	250	478	430	370	90	153
Average Queue (ft)	114	107	153	182	68	121	127	263	253	62	48	60
95th Queue (ft)	177	201	298	356	172	190	246	425	391	230	92	109
Link Distance (ft)			512	512				466	466			
Upstream Blk Time (%)								1				
Queuing Penalty (veh)								5				
Storage Bay Dist (ft)	200	200			100	150	150			250	170	170
Storage Blk Time (%)	0	0	3	19	0	6	2	22	9			0
Queuing Penalty (veh)	0	0	9	34	2	25	7	56	12			0

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	R
Maximum Queue (ft)	264	252	130	109	218	272	148	129
Average Queue (ft)	125	90	46	53	136	114	57	56
95th Queue (ft)	226	207	120	96	199	201	114	102
Link Distance (ft)	575	575			1102	1102		
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			80	100			200	200
Storage Blk Time (%)	8	12	1	1	29	2		
Queuing Penalty (veh)	8	13	1	2	15	7		

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	LR
Maximum Queue (ft)	107	148	375	250	428	418
Average Queue (ft)	31	44	89	85	163	187
95th Queue (ft)	85	109	225	191	281	312
Link Distance (ft)	466	466	550	550		1193
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)					350	
Storage Blk Time (%)						1
Queuing Penalty (veh)						3

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	NW	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	UL	L	T
Maximum Queue (ft)	28	173	218	150	395	250	153	104	132	66	88	231
Average Queue (ft)	5	69	97	102	157	121	38	43	55	26	34	90
95th Queue (ft)	16	142	181	170	290	208	95	89	106	59	72	163
Link Distance (ft)		550	550		2655	2655		935	935			2910
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	80			100			130			120	120	
Storage Blk Time (%)		8		41	10		1		10			2
Queuing Penalty (veh)		2		144	8		1		1			3

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW	NW
Directions Served	T	R
Maximum Queue (ft)	224	140
Average Queue (ft)	104	14
95th Queue (ft)	176	81
Link Distance (ft)	2910	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		70
Storage Blk Time (%)	27	
Queuing Penalty (veh)	7	

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	292	242	194	321	281	184	180
Average Queue (ft)	96	95	153	120	103	107	50
95th Queue (ft)	203	199	230	280	215	159	127
Link Distance (ft)	762	762		575	575	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)			27	7		1	1
Queuing Penalty (veh)			54	28		3	1

Intersection: 11: Stillman Street & Southern Driveway

Movement	SB
Directions Served	LR
Maximum Queue (ft)	70
Average Queue (ft)	35
95th Queue (ft)	62
Link Distance (ft)	454
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	L
Maximum Queue (ft)	81	81	60	93	53	71	72	165	123	363	426	136
Average Queue (ft)	17	38	13	37	20	16	27	84	26	172	199	57
95th Queue (ft)	63	78	44	75	48	49	57	141	81	344	379	109
Link Distance (ft)			307			356	356			673	673	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	75	75		100	100			300	300			320
Storage Blk Time (%)	0	3	0	0						2		
Queuing Penalty (veh)	0	4	0	0						2		

Intersection: 12: Highland Avenue & Stillman Street

Movement	SB	SB	SB	SB	SB
Directions Served	L	T	T	R	R
Maximum Queue (ft)	47	303	312	86	44
Average Queue (ft)	10	142	153	33	3
95th Queue (ft)	35	269	294	65	18
Link Distance (ft)		762	762		
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	320			320	320
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	93	101	74	116	79	243	239	193	215	308
Average Queue (ft)	34	26	34	58	17	141	140	78	92	132
95th Queue (ft)	68	67	69	101	56	233	240	145	206	260
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)						0				
Queuing Penalty (veh)						0				

Network Summary

Network wide Queuing Penalty: 561

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NB	NB	NB	B29	B29	SB	SB	SE	SE	SE	SE	NW
Directions Served	L	T	R	T		L	TR	UL	T	T	R	UL
Maximum Queue (ft)	370	448	120	757	608	270	1052	56	220	361	170	16
Average Queue (ft)	188	237	26	101	20	77	449	6	90	110	103	1
95th Queue (ft)	356	431	104	487	200	241	795	27	164	226	191	7
Link Distance (ft)		376		1102	1102		1299		2540	2540		
Upstream Blk Time (%)	0	2										
Queuing Penalty (veh)	0	21										
Storage Bay Dist (ft)	250		80			150		200			70	75
Storage Blk Time (%)	1	27					56			19	18	
Queuing Penalty (veh)	8	108					31			85	44	

Intersection: 1: Highland Avenue & Golden State Boulevard

Movement	NW	NW	B32
Directions Served	T	T	T
Maximum Queue (ft)	74	77	1092
Average Queue (ft)	17	28	73
95th Queue (ft)	51	67	522
Link Distance (ft)	1098	1098	935
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 2: DeWolf Avenue & Floral Avenue

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (ft)	144	77	77	113	72
Average Queue (ft)	63	48	53	55	25
95th Queue (ft)	98	71	72	86	50
Link Distance (ft)	2669		1937	2731	2628
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		150			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Future N-S Road & Floral Avenue

Movement	EB	EB	EB	WB	WB	NB
Directions Served	T	T	R	LT	T	L
Maximum Queue (ft)	804	825	370	584	586	94
Average Queue (ft)	389	393	194	234	172	50
95th Queue (ft)	868	894	483	437	381	91
Link Distance (ft)	1184	1184		624	624	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			250			250
Storage Blk Time (%)		42				
Queuing Penalty (veh)		55				

Intersection: 4: Floral Avenue & Walmart Main Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	UL	T	TR	L	TR	L	LTR
Maximum Queue (ft)	190	649	658	190	375	476	476	44	129	200	335
Average Queue (ft)	66	516	522	36	303	393	350	12	54	140	198
95th Queue (ft)	184	816	800	151	478	565	540	34	105	225	312
Link Distance (ft)		624	624			380	380		335		716
Upstream Blk Time (%)		21	23		4	24	11				
Queuing Penalty (veh)		119	131		0	240	109				
Storage Bay Dist (ft)	100			100	340			100		100	
Storage Blk Time (%)		66	68		24	23			2	11	43
Queuing Penalty (veh)		21	16		146	64			0	32	89

Intersection: 5: Eastern Driveway & Floral Avenue

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	T	T	R
Maximum Queue (ft)	400	399	315	274	114
Average Queue (ft)	334	338	113	92	41
95th Queue (ft)	488	491	294	268	81
Link Distance (ft)	380	380	229	229	293
Upstream Blk Time (%)	10	10	4	1	
Queuing Penalty (veh)	85	88	41	13	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: SR 99 SB Off-Ramp & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	L	L	TR	R
Maximum Queue (ft)	280	283	150	300	518	472	163	201	153	355	315
Average Queue (ft)	242	254	85	163	199	146	59	84	93	211	184
95th Queue (ft)	272	285	192	303	402	311	123	147	145	330	313
Link Distance (ft)	229	229			512	512	218			1827	
Upstream Blk Time (%)	33	34			1						
Queuing Penalty (veh)	317	320			6						
Storage Bay Dist (ft)			100	200				380	380		380
Storage Blk Time (%)		48	0	22	2						
Queuing Penalty (veh)		56	0	157	3						

Intersection: 7: Highland Avenue & Floral Avenue

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	R	L	L	T	T	R	L	L
Maximum Queue (ft)	225	250	529	570	160	200	250	548	547	370	150	279
Average Queue (ft)	184	222	479	463	117	183	236	482	463	199	53	71
95th Queue (ft)	259	317	595	676	217	225	312	618	625	465	111	179
Link Distance (ft)			512	512				466	466			
Upstream Blk Time (%)			5	5				42	26			
Queuing Penalty (veh)			49	55				290	178			
Storage Bay Dist (ft)	200	200			100	150	150			250	170	170
Storage Blk Time (%)	15	12	15	38	0	72	3	49	38			0
Queuing Penalty (veh)	103	79	84	94	0	358	13	126	66			0

Intersection: 7: Highland Avenue & Floral Avenue

Movement	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	R	L	T	T	R	R
Maximum Queue (ft)	382	291	130	179	299	160	173	183
Average Queue (ft)	146	115	51	79	162	92	103	93
95th Queue (ft)	288	234	122	142	243	155	164	149
Link Distance (ft)	575	575			1102	1102		
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			80	100			200	200
Storage Blk Time (%)	8	15	2	6	26			0
Queuing Penalty (veh)	8	19	4	13	22			0

Intersection: 8: SR 99 NB Off-Ramp & Floral Avenue

Movement	EB	EB	WB	WB	NB	NB
Directions Served	T	T	T	T	L	LR
Maximum Queue (ft)	455	466	582	588	469	603
Average Queue (ft)	83	97	382	385	199	269
95th Queue (ft)	218	229	710	702	372	477
Link Distance (ft)	466	466	550	550		1193
Upstream Blk Time (%)	0	0	8	8		
Queuing Penalty (veh)	0	1	43	42		
Storage Bay Dist (ft)					350	
Storage Blk Time (%)					1	7
Queuing Penalty (veh)					4	12

Intersection: 9: Whitson Street & Floral Avenue

Movement	EB	EB	EB	WB	WB	WB	SE	SE	SE	SE	NW	NW
Directions Served	UL	T	TR	L	T	TR	UL	T	T	R	UL	L
Maximum Queue (ft)	144	550	563	150	384	364	228	203	220	140	185	250
Average Queue (ft)	53	287	316	72	160	172	87	92	111	27	103	123
95th Queue (ft)	136	507	544	165	309	305	169	177	201	118	200	249
Link Distance (ft)		550	550		2655	2655		935	935			
Upstream Blk Time (%)		0	0									
Queuing Penalty (veh)		0	1									
Storage Bay Dist (ft)	80			100			130			70	120	120
Storage Blk Time (%)	5	35		20	18		4	4	30		21	26
Queuing Penalty (veh)	22	23		74	12		9	7	12		32	38

Intersection: 9: Whitson Street & Floral Avenue

Movement	NW	NW	NW
Directions Served	T	T	R
Maximum Queue (ft)	453	158	137
Average Queue (ft)	131	98	9
95th Queue (ft)	320	157	65
Link Distance (ft)	2910	2910	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			70
Storage Blk Time (%)	2	28	
Queuing Penalty (veh)	5	11	

Intersection: 10: Highland Avenue & SR 99 SB Ramps

Movement	NB	NB	SB	SB	SB	SE	SE
Directions Served	T	T	L	T	T	R	R
Maximum Queue (ft)	302	311	194	406	178	319	320
Average Queue (ft)	163	153	146	90	48	178	136
95th Queue (ft)	297	274	231	269	108	292	276
Link Distance (ft)	762	762		575	575	1130	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			65				175
Storage Blk Time (%)		0	37	2		20	9
Queuing Penalty (veh)		0	80	7		49	23

Intersection: 11: Stillman Street & Southern Driveway

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	53	76
Average Queue (ft)	4	32
95th Queue (ft)	23	54
Link Distance (ft)	792	454
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Highland Avenue & Stillman Street

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	NB	B30
Directions Served	L	L	T	R	L	T	R	L	L	T	TR	T
Maximum Queue (ft)	100	124	266	220	142	96	96	360	420	763	688	565
Average Queue (ft)	70	100	120	146	47	19	45	280	269	364	240	47
95th Queue (ft)	133	146	279	249	104	56	81	429	527	824	528	251
Link Distance (ft)			307			356	356			673	673	560
Upstream Blk Time (%)										15	0	1
Queuing Penalty (veh)										78	2	3
Storage Bay Dist (ft)	75	75		100	100			300	300			
Storage Blk Time (%)	6	39	0	22	3	0		51	30	0		
Queuing Penalty (veh)	24	158	2	53	0	0		177	103	0		

Intersection: 12: Highland Avenue & Stillman Street

Movement	B30	SB	SB	SB	SB	SB	SB
Directions Served	T	L	L	T	T	R	R
Maximum Queue (ft)	550	90	53	280	271	71	22
Average Queue (ft)	18	55	13	171	173	25	1
95th Queue (ft)	181	89	43	283	274	51	7
Link Distance (ft)	560			762	762		
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)		320	320			320	320
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 13: Highland Avenue & Rose Avenue

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	72	69	116	98	72	291	242	369	483	489
Average Queue (ft)	22	19	44	52	25	139	118	189	126	136
95th Queue (ft)	55	47	83	86	61	239	219	338	341	298
Link Distance (ft)		2563		2526		2513	2513		560	560
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	250		250		250			250		
Storage Blk Time (%)						1		17	0	
Queuing Penalty (veh)						0		82	0	

Network Summary

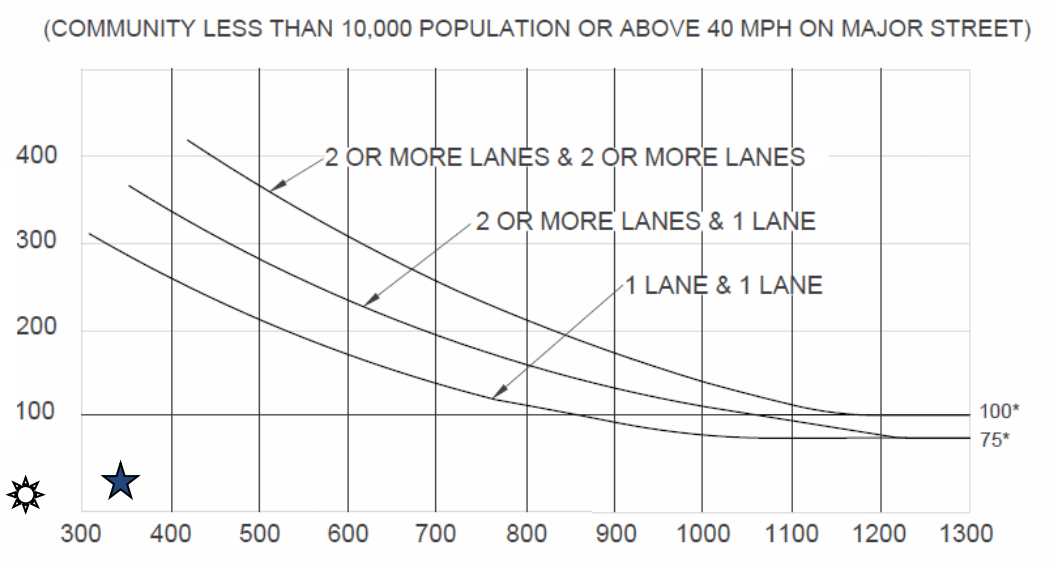
Network wide Queuing Penalty: 5155

Appendix J: Traffic Signal Warrants

Warrant 3: Peak Hour (Rural)

Existing Traffic Conditions
2. DeWolf Avenue / Floral Avenue
AM (PM) Peak Hour

DeWolf Avenue Highest Approach Volume = 16 (28) VPH



Floral Avenue Total of Both Approaches =

166 (340) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

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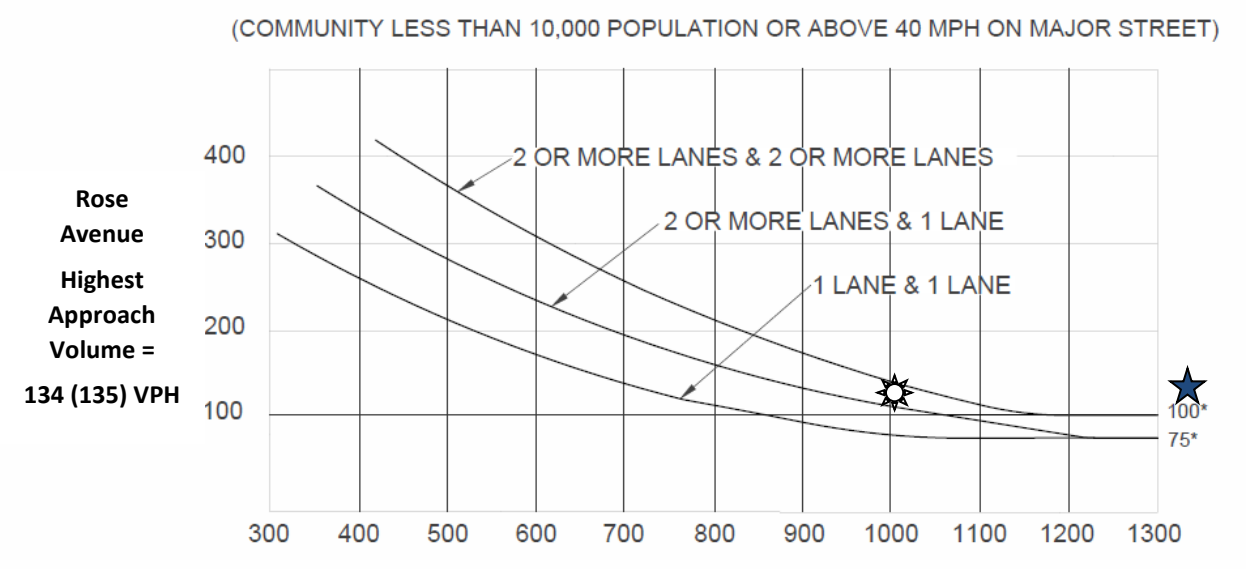
516 W. Shaw Ave., Ste. 103

Fresno, CA 93704

(559) 570-8991

Warrant 3: Peak Hour (Rural)

Existing Traffic Conditions
13. Highland Avenue / Rose Avenue
AM (PM) Peak Hour



Highland Avenue Total of Both Approaches =

1007 (1453) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

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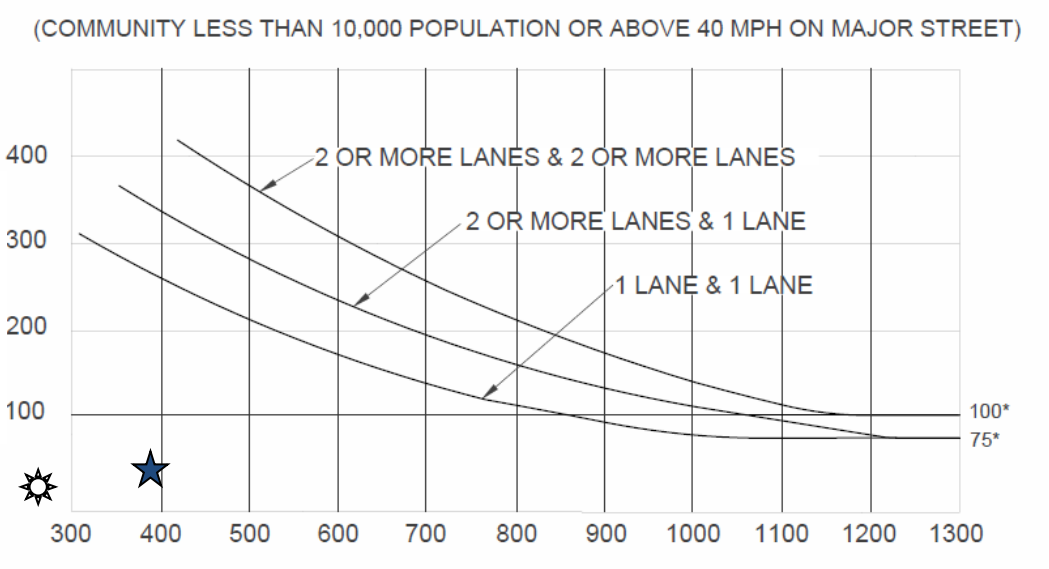
Fresno, CA 93704

(559) 570-8991

Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
2. DeWolf Avenue / Floral Avenue
AM (PM) Peak Hour

DeWolf Avenue Highest Approach Volume = 24 (41) VPH



Floral Avenue Total of Both Approaches =

221 (381) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
November 7, 2014

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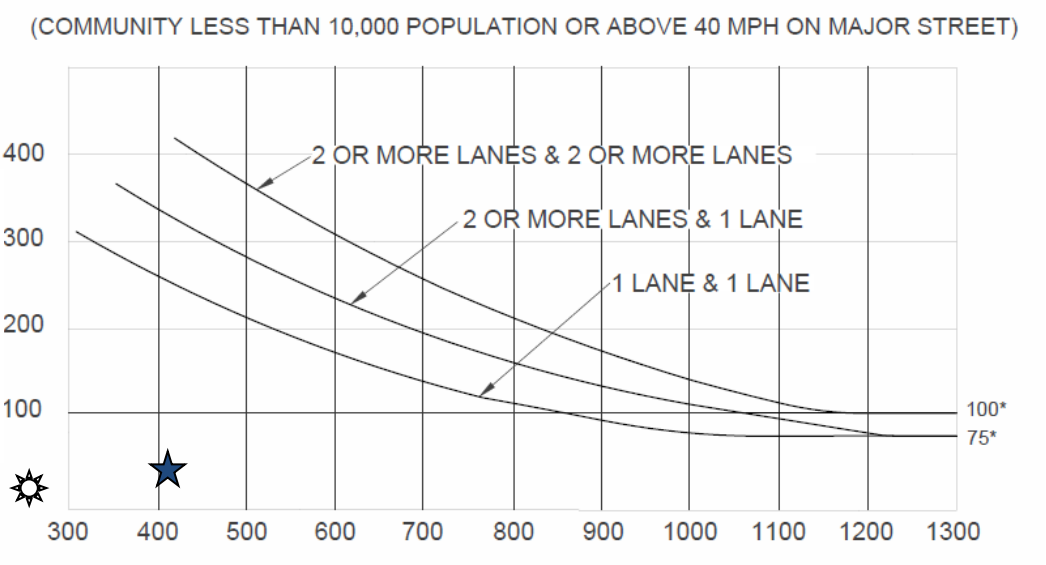
Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
3. Future N-S Road / Floral Avenue
AM (PM) Peak Hour

Future N-S Road

Highest Approach Volume =

20 (44) VPH



Floral Avenue Total of Both Approaches =

278 (412) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

Source: California Manual of Uniform Traffic Control Devices (CA MUTCD 2014 Edition)
Chapter 4C: Traffic Control Signal Needs Studies
Part 4: Highway Traffic Signals
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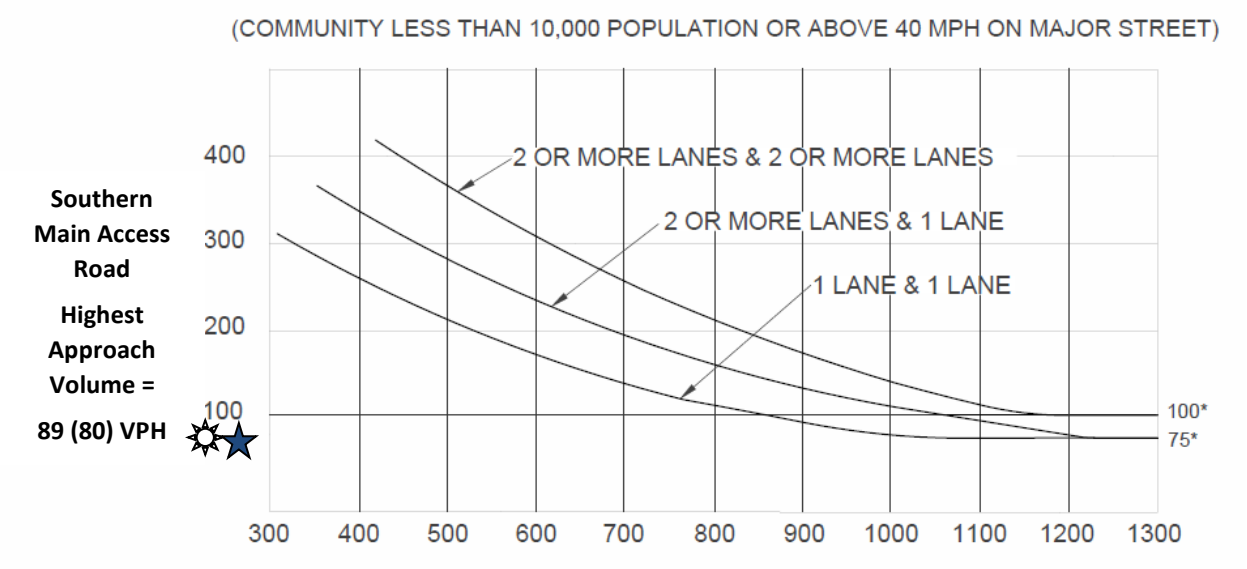
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Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
11. Southern Main Access Road / Stillman Avenue
AM (PM) Peak Hour



Southern Main Access Road

Highest Approach Volume =

89 (80) VPH

Stillman Avenue Total of Both Approaches =

116 (169) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

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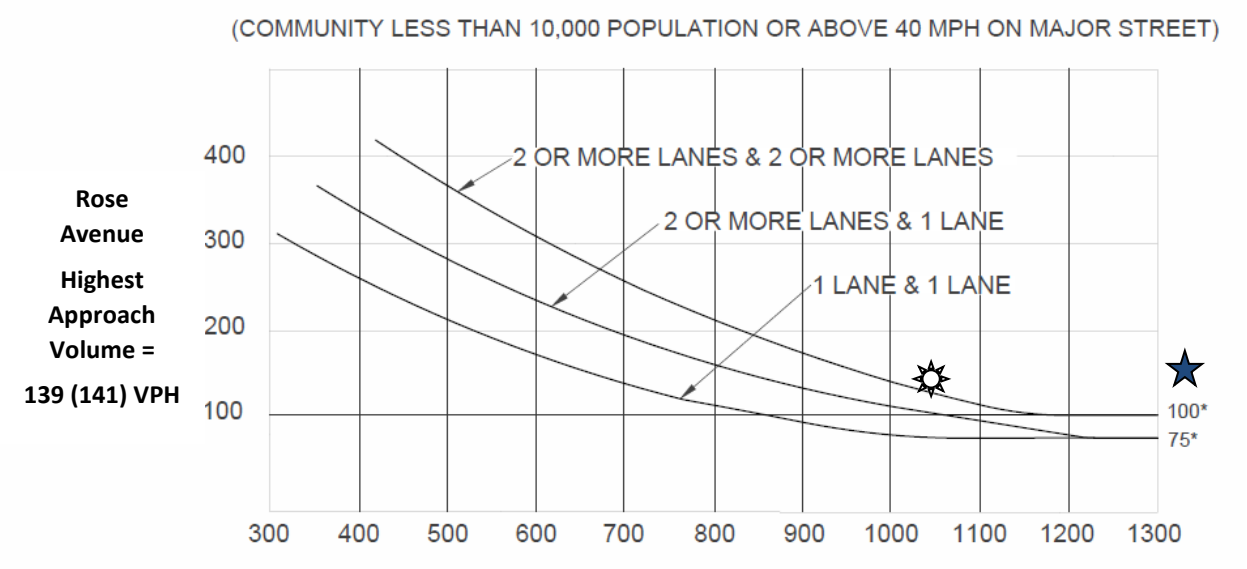
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Warrant 3: Peak Hour (Rural)

Existing plus Project Traffic Conditions
13. Highland Avenue / Rose Avenue
AM (PM) Peak Hour



Highland Avenue Total of Both Approaches =

1041 (1481) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

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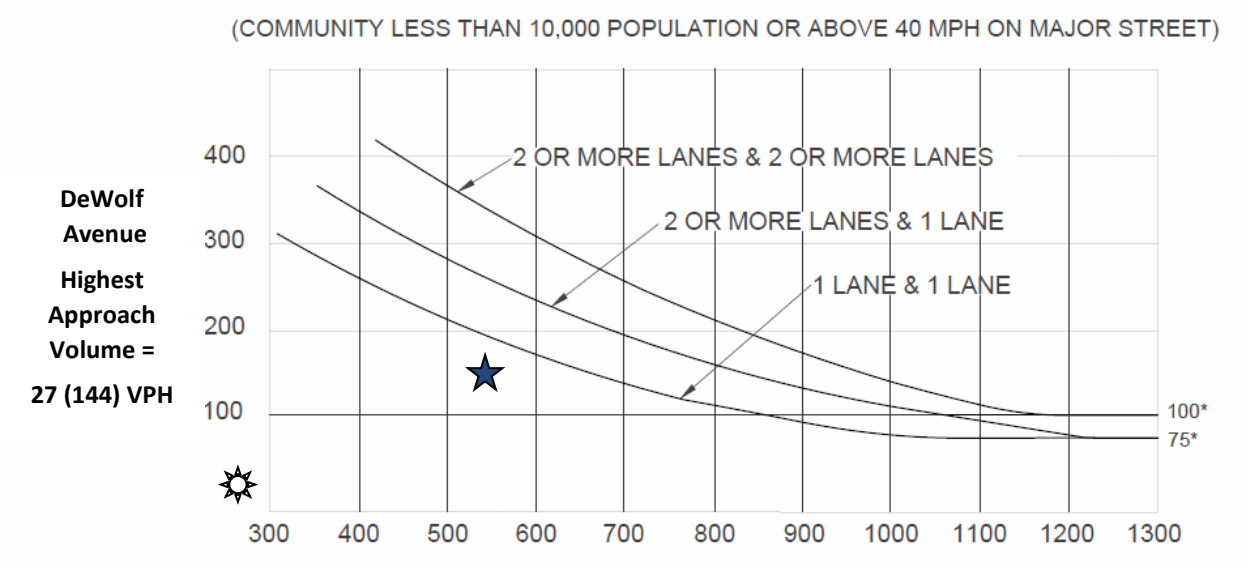
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Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
2. DeWolf Avenue / Floral Avenue
AM (PM) Peak Hour



Floral Avenue Total of Both Approaches =

260 (541) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

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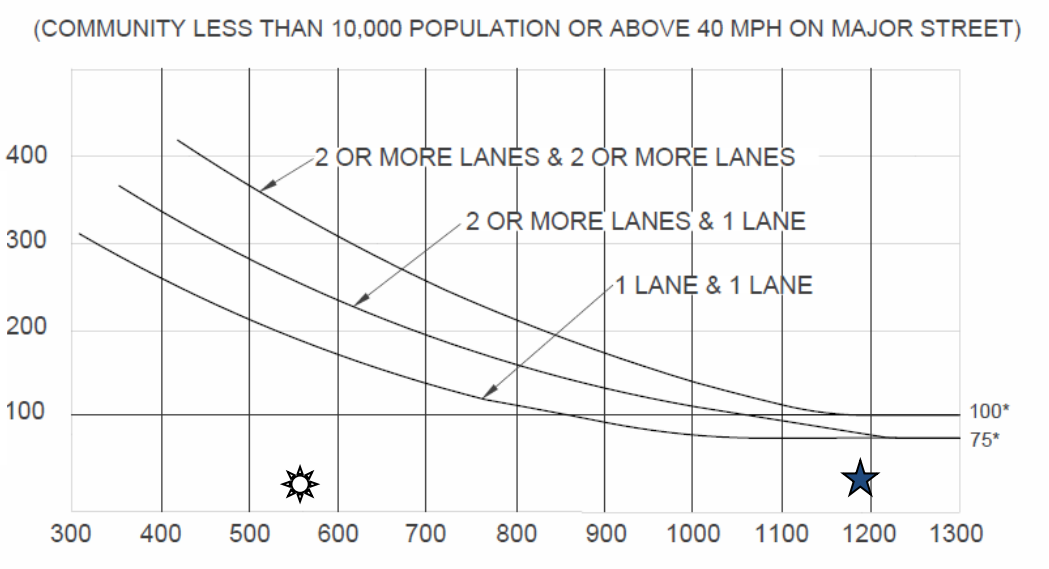
Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
3. Future N-S Road / Floral Avenue
AM (PM) Peak Hour

Future N-S Road

Highest Approach Volume =

30 (44) VPH



Floral Avenue Total of Both Approaches =

563 (1196) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

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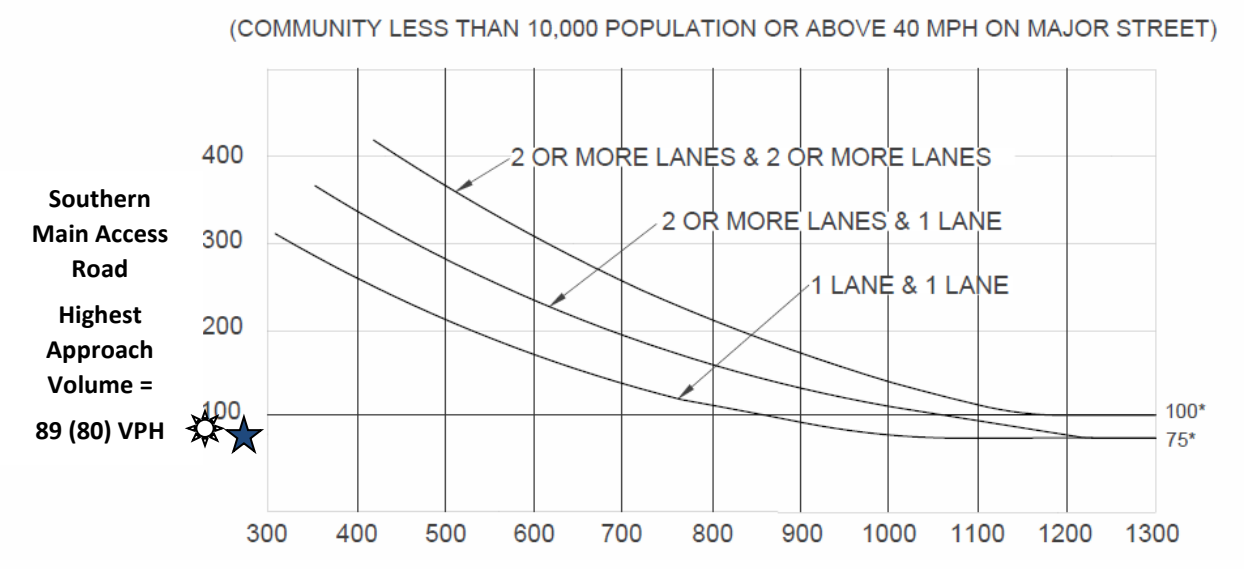
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Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
11. Southern Main Access Road / Stillman Avenue
AM (PM) Peak Hour



Stillman Avenue Total of Both Approaches =

132 (205) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

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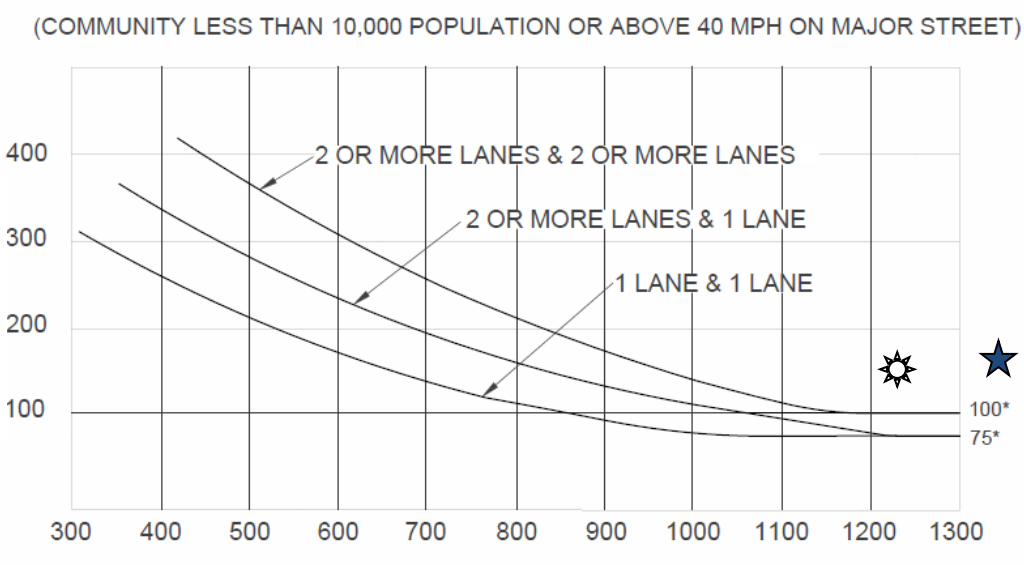
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Warrant 3: Peak Hour (Rural)

Near Term plus Project Traffic Conditions
13. Highland Avenue / Rose Avenue
AM (PM) Peak Hour

Rose Avenue Highest Approach Volume = 156 (168) VPH



Highland Avenue Total of Both Approaches =

1224 (1781) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

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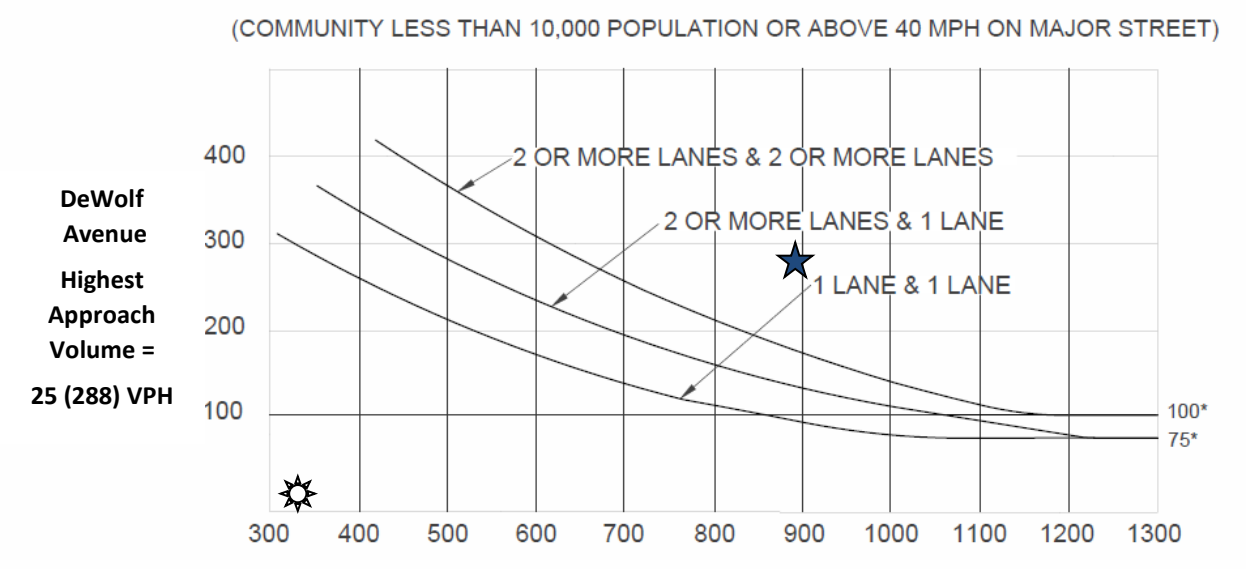
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Warrant 3: Peak Hour (Rural)

Cumulative Year 2046 No Project Traffic Conditions
2. DeWolf Avenue / Floral Avenue
AM (PM) Peak Hour



DeWolf Avenue Highest Approach Volume = 25 (288) VPH

Floral Avenue Total of Both Approaches = 328 (889) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Met

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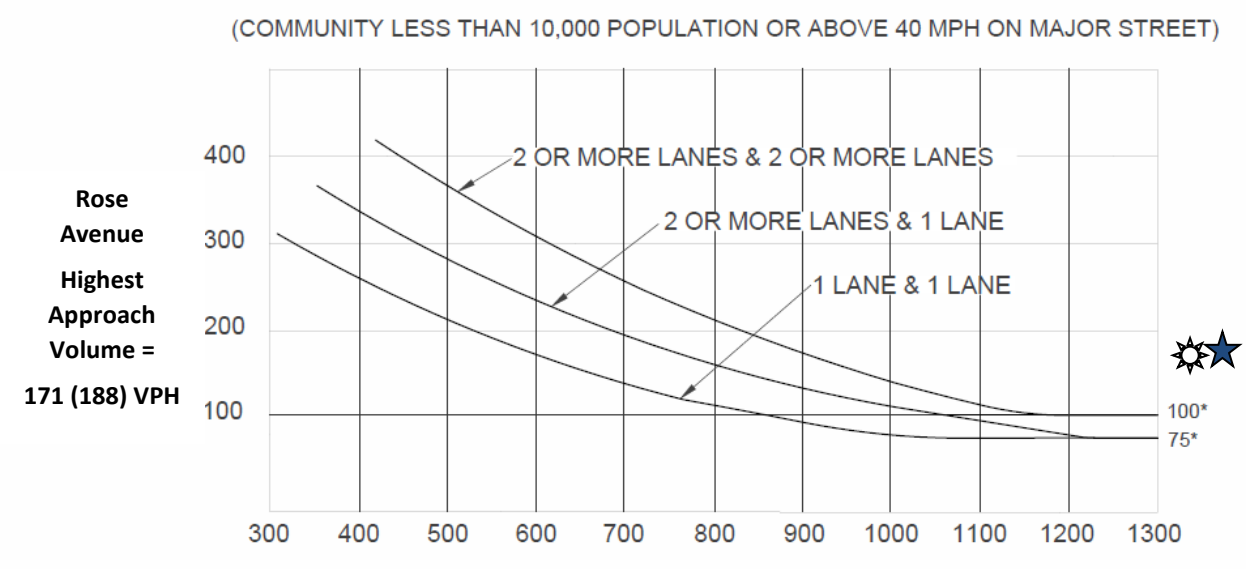
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Warrant 3: Peak Hour (Rural)

Cumulative Year 2046 No Project Traffic Conditions
13. Highland Avenue / Rose Avenue
AM (PM) Peak Hour



Highland Avenue Total of Both Approaches =

1520 (2098) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

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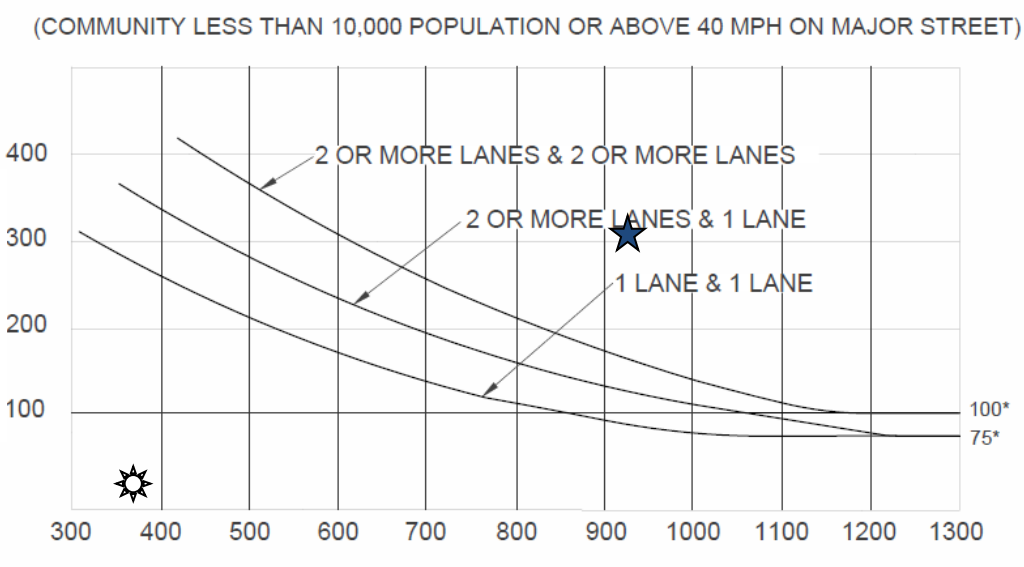
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Warrant 3: Peak Hour (Rural)

Cumulative Year 2046 plus Project Traffic Conditions
2. DeWolf Avenue / Floral Avenue
AM (PM) Peak Hour

DeWolf Avenue Highest Approach Volume = 36 (301) VPH



Floral Avenue Total of Both Approaches =

383 (930) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Met

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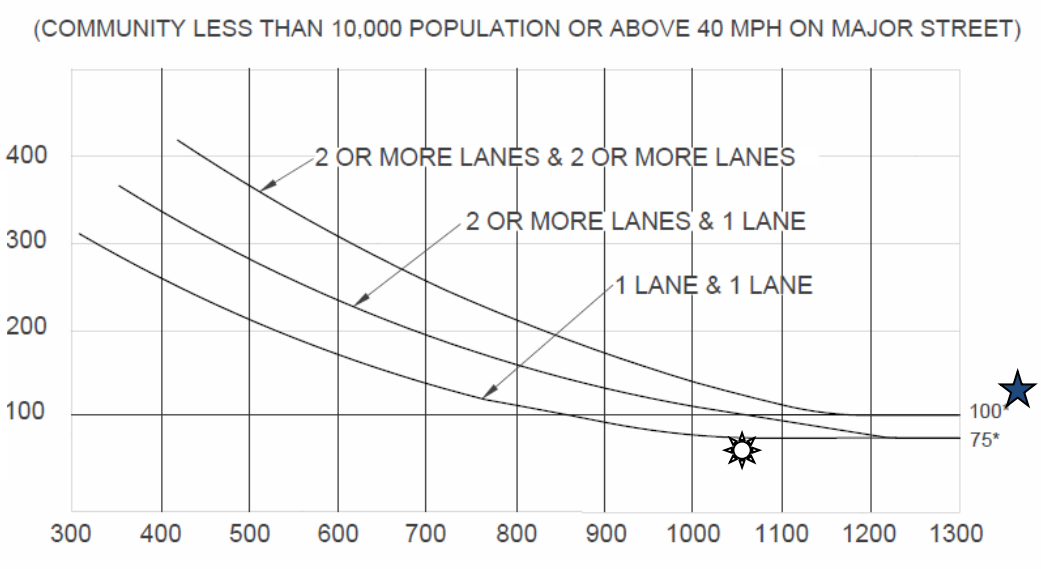
Warrant 3: Peak Hour (Rural)

Cumulative Year 2046 plus Project Traffic Conditions
3. Future N-S Road / Floral Avenue
AM (PM) Peak Hour

Future N-S Road

Highest Approach Volume =

62 (109) VPH



Floral Avenue Total of Both Approaches =

1067 (2502) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Met

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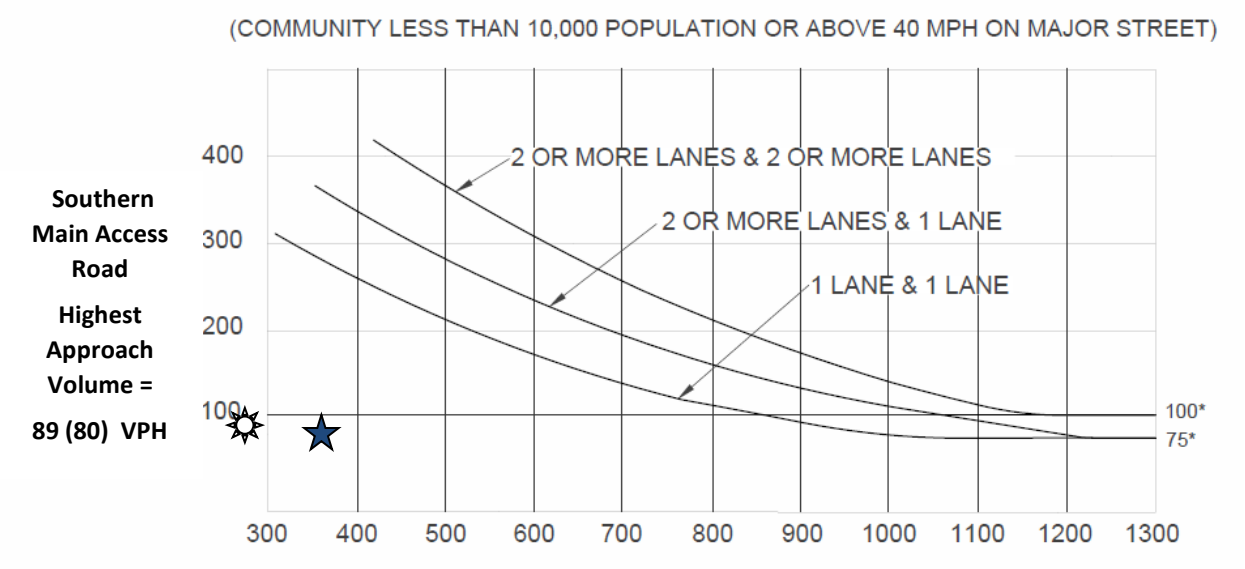
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Warrant 3: Peak Hour (Rural)

Cumulative Year 2046 plus Project Traffic Conditions
11. Southern Main Access Road / Stillman Avenue
AM (PM) Peak Hour



Southern Main Access Road

Highest Approach Volume =

89 (80) VPH

Stillman Avenue Total of Both Approaches =

191 (367) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Not Met

PM Peak Hour – Signal Warrant is Not Met

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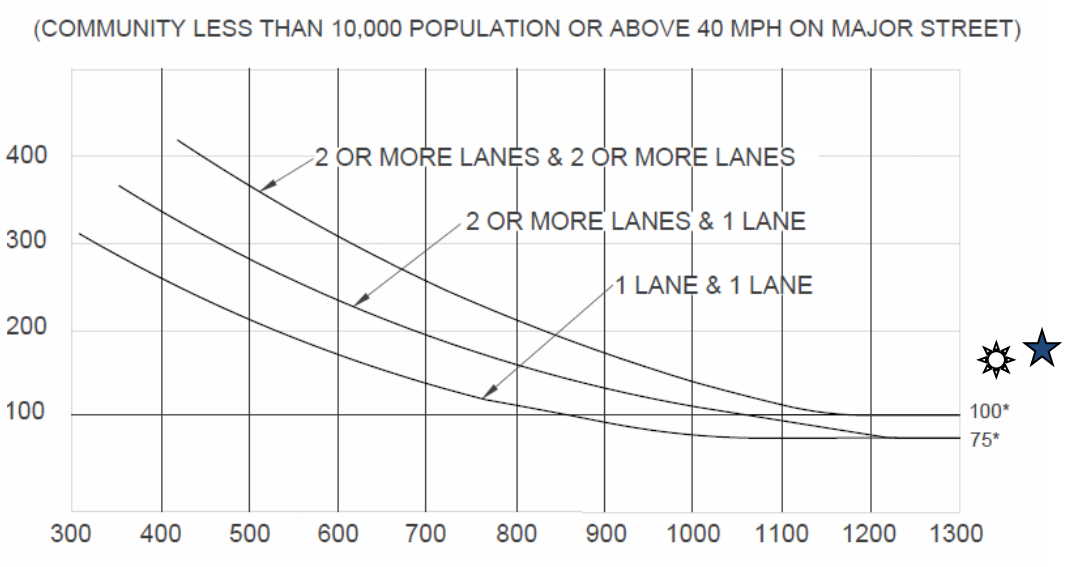
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Warrant 3: Peak Hour (Rural)

Cumulative Year 2046 plus Project Traffic Conditions
13. Highland Avenue / Rose Avenue
AM (PM) Peak Hour

Rose Avenue Highest Approach Volume = 176 (194) VPH



Highland Avenue Total of Both Approaches =

1554 (2126) VPH

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

AM Peak Hour – Signal Warrant is Met

PM Peak Hour – Signal Warrant is Met

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