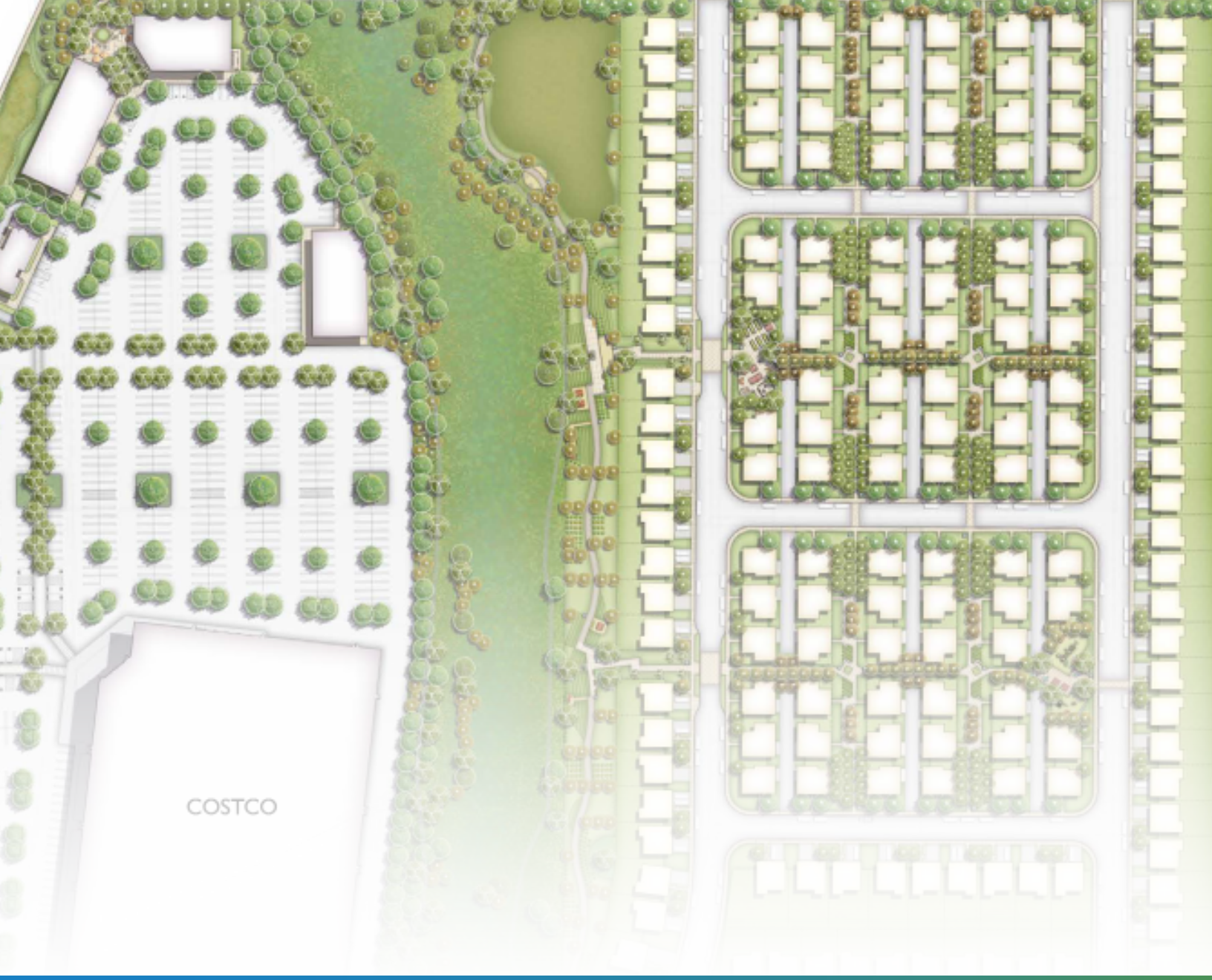


Fairview at Northgate Project

Draft EIR Technical Appendices (2 of 2)

Project Number: TM #17-0002, PD #17-0007, ZMA #17-0001, UP #18-0007
State Clearinghouse No. 2018102007

January 2020

City of VALLEJO California

Kimley»Horn

FAIRVIEW AT NORTHGATE PROJECT

Draft Environmental Impact Report

Technical Appendices

(H through K)

PROJECT NUMBERS: PD 17-0007, TM #17-0002, ZMA #17-0001, UP #18-0007

STATE CLEARINGHOUSE NO. 2018102007

City of Vallejo

Planning Division

555 Santa Clara Street

Vallejo, California 94590

Contact: Aaron Sage

JANUARY 2020

PREPARED BY:

Kimley»Horn

TECHNICAL APPENDICES

Appendix A: Notice of Preparation and Comments Received

Appendix B: Economic Impact Analysis; and

Fiscal Impact Analysis

Appendix C: Air Quality and Greenhouse Gas Study Modeling Data; and

Climate Action Plan Checklist

Appendix D: Biological Resources Assessment; and

Delineation of Water of the U.S. Report

Appendix E: Cultural Resources Report

Appendix F: Preliminary Geotechnical Report

Appendix G: Phase I Environmental Site Assessment

Appendix H: Stormwater Control Plan for Commercial Component; and

Stormwater Control Plan for Residential Component

Appendix I: Noise Measurement Field Sheets and Traffic Noise Calculations

Appendix J: Transportation Impact Analysis

Appendix K: Potable Water Demand Projections; and

Cooke Sewer Capacity Evaluation; and

Sanitary Sewer Capacity Calculations

Appendix H

Stormwater Control Plan for Commercial Component; and

Stormwater Control Plan for Residential Component

STORMWATER CONTROL PLAN
for
FAIRVIEW AT NORTHGATE COMMERCIAL PROJECT
COOKE PROPERTY, CITY OF VALLEJO

November 6, 2018

Prepared for:

Vallejo-Fairfield Developers, LLC

Prepared by:

MacKay & Somps Civil Engineers

5142 Franklin Drive, Suite B

Pleasanton, CA 94588

Contact: James F. Templeton

Phone: (925) 225-0690

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I. Project Data and Objective

The following Stormwater Control Plan Report for the Fairview at Northgate Commercial Project, presented herein, follows the Contra Costa County Stormwater C.3 Guidebook, 7th edition. The Fairview at Northgate Residential Project is located in the City of Vallejo within Solano County, however, per the request of the City (email from Alea Gage dated October 25, 2018), the present analysis follows the Contra Costa County procedures. A summary of relevant project data is shown in **Table 1**.

The overall objective of this report is to demonstrate the Fairview at Northgate Commercial Project fulfills C.3 compliance requirements set forth in the California Regional Water Quality Control Boards' Municipal Regional Permit.

The Commercial Project must comply with Hydromodification Management Plan (HMP) requirements as the proposed development creates more than 1-acre of impervious land; the existing project site is pervious, barren land. Per the County Stormwater C.3 Guidebook, compliance with HMP may be met through one of two options: (i) apply "LID Design Guide" in Chapter 3 of the C.3 Guidebook to satisfy both treatment and flow-control requirements or (ii) apply a continuous simulation hydrologic modeling analysis to verify post-project flows match pre-project flows for 10% of 2-year peak up to 10-year peak. To satisfy HMP for the Fairview at Northgate Commercial Project, the former option – "LID Design Guide" will be applied.

Table 1. Project Data

Project Name/Number	Fairview at Northgate Commercial Project
Application Submittal Date	November 6, 2018
Project Location	APN 0081-490-010 City of Vallejo, Solano County, CA 94591
Name of Applicant	Vallejo-Fairfield Developers, LLC
Project Phase No.	N/A
Project Type and Description	CP (Pedestrian Shopping and Service), MUPD (Mixed Use Planned Development)
Project Watershed	Blue Rock Springs Creek
Total Project Site Area [1]	21.7 acres (946,593 sf)
Total Area of Land Disturbed [1]	21.7 acres (946,593 sf)
Total New Impervious Surface Area	771,138 sf
Total Replaced Impervious Surface Area	0 sf
Total Pre-Project Impervious Surface Area	0 sf

Total Post-Project Impervious Surface Area	771,138 sf
50% Rule [2]	Applies
Project Density	Floor Area Ratio 0.40 (maximum)
Applicable Special Project Categories	None
Percent LID and non-LID treatment	100% LID Treatment
HMP Compliance [3]	Does Apply

Notes:

[1] Refer to Figure 2 for "Total Project Site Area" boundary of the Commercial Project

[2] 50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

[3] HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre

II. Setting

II.A. Project Overview

The proposed 21.7-acre "Commercial Project" site is located in the City of Vallejo within Solano County, California. The project is east of the Interstate 80 freeway and is bounded by Turner Parkway on the north and Admiral Callaghan Lane on the east. A vicinity map for the Fairview at Northgate Commercial Project is shown on **Figure 1**.

The proposed project development will be utilized for a mixed-use development, which includes 150,000 square feet of floor space for a main building (Costco Wholesale) and 28,000 square feet of additional building space for retail shopping. Approximately 133,000 square feet of landscaped buffer strips and parking medians interspersed throughout the site will provide tree plantings and regions for multiple stormwater quality treatment facilities.

II.B. Existing Site Condition

The existing 21.7-acre site is composed of natural open space with low-lying vegetation and minimal tree canopy cover. Since the late 1930s, the site has been undeveloped and was used for grazing activities until the early 1970s.

In terms of physiographic features, the site soils are classified as elastic silt (MH), lean clay (CL), lean clay with gravel (CL), clayey sand with gravel (SC), siltstone, and sandstone. Based on preliminary subsurface exploration performed by the geotechnical (ENGEO), the site does not have perched groundwater at pit depths of 10-feet and the site presents a low seismic hazard risk.

Elevations for the existing site range from 88 ft to 137 ft (NAVD88), and surface water generally flows to the northeast towards a natural drainage swale which conveys flows towards Turner Parkway. Runoff ultimately discharges into Blue Rock Springs Creek. An existing site map for the Commercial Project location is shown on **Figure 2**.

II.C. Constraints and Opportunities for Stormwater Control

The Commercial Project has the following constrains and opportunities:

Constraints

- The composition of the existing silty soils and clayey sands on the project site translates to lower permeability and higher runoff potential. For stormwater treatment facilities, soils with moderate to high infiltration rates are ideal.
- The overall Commercial Project site has a relatively high impervious fraction of 80%, thus causing larger peak flows and faster runoff travel times.

Opportunities

- Proposed grading for the commercial site shows there is sufficient drainage relief with overland slopes ranging from 1% to 3%. These moderate slopes will benefit the ability to surface flow runoff into stormwater treatment facilities, instead of relying on subsurface pipe routing.
- According to the preliminary geotechnical investigation, there is no high groundwater table, no liquefaction susceptibility, and no high risk of uplift/subsidence. In general, the existing site soil conditions are moderately adequate for the proposed stormwater treatment basin facilities.

III. Low Impact Development Design Strategies

III.A. Site Design Optimization

There are no existing natural drainage features within the project boundary, however, stormwater runoff drains east to a 5.7-acre off-site open space, natural drainage corridor which directs flows north, and eventually west along Turner Parkway before discharging into Blue Rock Springs Creek. The proposed commercial site drainage generally mimics the watercourse paths of the existing site condition.

The Commercial Project uses numerous parking medians within the parking lot and a long perimeter strip of softscape along Admiral Callaghan Lane as locations for stormwater basin facilities. For aesthetic purposes, suitable deciduous trees and ground plantings will be placed within each basin facility area. The strip of trees planted amongst the basin facilities paralleling Admiral Callaghan Lane provides a visual barrier to roadway traffic.

III.B. Permeable Pavements

Presently, the Commercial Project does not plan to incorporate permeable pavements into the site design.

III.C. Dispersal of Runoff to Pervious Areas

About 20% of the commercial site will be pervious landscape, which presents a less favorable scenario for flow dispersal from impervious runoff. Majority of stormwater runoff from impervious cover, specifically the parking lot, surface flows directly into stormwater treatment facilities.

III.D. Integrated Management Practices

The proposed Commercial Project will implement "Integrated Management Practices to treat a total drainage area of 946,593 square feet (21.7-acre) with an impervious ratio of 81.5%. A total of twenty bioretention treatment facilities, located throughout the site, provide a cumulative treatment area of 42,245 square feet. The bioretention facilities are designed to meet both treatment and flow-control requirements.

IV. Documentation of Drainage Design

IV.A. Drainage Management Area Overview

To simplify the IMP sizing analysis, the Commercial Project was delineated into a single "Drainage Management Area" (DMA); refer to **Figure 3**. Further division of the DMA is not warranted given the current stage of the project and the present project objectives.

IV.A.1. Summary of Drainage Management Area

For the Commercial Project, a summary of impervious, pervious, and bioretention areas is shown in **Table 2**. The total area of bioretention is based on an iterative approach using the Contra Costa County IMP Calculator program.

Table 2. Drainage Management Areas for Commercial Project

DMA Name	Drainage Area (sf)	Impervious Surface: Concrete or Asphalt (sf)	Pervious Surface: Landscape, Soil Group D (sf)	Total Bioretention Facility Area (sf)
DMA "A"	946,593	771,138	133,210	42,245

IV.A.2. Drainage Management Area Description

DMA "A" for the Commercial Project, totaling 946,593 square feet, includes 771,138 square feet of impervious cover and 133,210 square feet of pervious landscape. The impervious area includes approximately 176,577 square feet of shops/retail building area and 594,561 square feet of parking and walkways. Untreated stormwater surface flows and enters through numerous curb-cut openings for the twenty bioretention facilities interspersed throughout the commercial site. The precise conveyance details and hydraulic design of the proposed treated and untreated stormdrain system have not been finalized, but will be completed with the preparation of construction documents.

IV.B. Integrated Management Practices

The bioretention treatment facilities for the Fairview at Northgate Commercial Project will be designed and constructed per the requirements of the Contra Costa County Stormwater C.3 Guidebook, 7th edition. A summary of these requirements are as follows:

- Each layer built flat, level, and to the elevations specified in the plans:
    - Bottom of Gravel Layer (BGL)
    - Top of Gravel Layer (TGL)
    - Top of Soil Layer (TSL)
    - Overflow Grate

    - Facility Rim
- 12 inches Class 2 permeable, Caltrans specification 68-2.02F(3).
- 18 inches sand/compost mix meeting the specifications approved by the Regional Water Quality Control Board in April 2016.
- 4-inch minimum diameter PVC SDR 35 perforated pipe underdrain, installed with the invert at the top of the Class 2 permeable layer with holes facing down, and connected to the overflow structure at that same elevation.
- 6-inch-deep reservoir between top of soil elevation and overflow grate elevation
- Concrete drop inlet with frame overflow structure, with grate set to specified elevation, connected to storm drain in main street.
- Plantings selected for suitability to climate and location, bioretention soil media (well-drained, low-fertility), and for water conservation.
- Irrigation system on a separate zone, with drip emitters and "smart" irrigation controllers.

A typical detail view for the bioretention treatment facility is shown on **Figure 4**.

IV.C. Tabulation and Sizing Calculations

The "Integrated management Practices" sizing calculations were performed by applying the IMP Calculator program developed by the County (Contra Costa Clean Water Program). The program computes the minimum IMP area according to the following relationships:

$$\text{Min. IMP Area or Volume} = \sum \left(\begin{matrix} \text{DMA} \\ \text{Square} \\ \text{Footage} \end{matrix} \times \begin{matrix} \text{DMA} \\ \text{Runoff} \\ \text{Factor} \end{matrix} \right) \times \left(\begin{matrix} \text{IMP} \\ \text{Sizing} \\ \text{Factor} \end{matrix} \right) \times \left(\begin{matrix} \text{Rain} \\ \text{Adjustment} \\ \text{Factor} \end{matrix} \right)$$

$$\begin{matrix} \text{IMP Sizing Factor} \\ \text{(For Bioretention)} \end{matrix} = \begin{cases} 0.07 & \text{for Soil Group A} \\ 0.11 & \text{for Soil Group B} \\ 0.06 & \text{for Soil Group C} \\ 0.05 & \text{for Soil Group D} \end{cases}$$

$$\text{Rain Adjustment Factor} = \frac{-0.0022 \times \left(\text{MAP}_{\text{project site}} - 20.2 \right) + 0.05}{0.05}$$

Table 3 provides an overview of the IMP design input values. A mean annual precipitation (MAP) of 22.5 inches for the project site is determined from the Solano County rainfall isohyetal map, as shown in **Appendix A**. The IMP design calculations apply Soil Group "D", as this classification is representative of the initial subsurface exploration performed by ENGEO. The geotechnical investigation revealed near-surface soils with high-fines and insubstantial permeability values, indicating low stormwater infiltration rates. Additionally, the IMP design calculations are performed for "Treatment Plus Flow Control" as hydromodification management applies for the Commercial Project. Program output from the County IMP Calculator are included in **Appendix B**, and the results are summarized in **Table 4**.

Table 3. IMP Design Input for Commercial Project

Total Impervious Area	771,138 sf (Concrete or Asphalt)
Total Pervious Area	133,210 sf (Landscape)
Mean Annual Precipitation	22.5 inches
NRCS Soil Group	"D"
IMPs Designed For	Treatment Plus Flow Control

Table 4. IMP Design Results for Commercial Project

IMP Name: Bio Basin A
IMP Type: Bioretention Facility
Drainage Area: 946,593 sf
Mean Annual Precipitation: 22.5 inches
IMPs Designed for: Treatment Plus Flow Control
Soil Type: "D"

DMA Name	DMA Area (sf)	Post-Project Surface Type	DMA Runoff Factor	(DMA Area) x (Runoff Factor)
DMA A1	771,138	Concrete or Asphalt	1.00	771,138
DMA A2	133,210	Landscape	0.70	93,247
			Total =	864,385

IMP Sizing Factor	Rain Adjustment Factor	Minimum Area (sf)
0.050	0.899	38,845

The Commercial Project proposes a total bioretention facility area of 42,245 square feet, and the IMP Calculator program computed a required minimum area of 38,845 square feet. As the Commercial Project moves into the design phase, the proposed bioretention facilities will be refined.

V. Source Control Measures

V.A. Site Activities and Potential Sources of Pollutants

The Fairview at Northgate Commercial Project will create potential sources of stormwater pollutants, and includes the following sources to be controlled:

- Onsite Storm Drain Inlets
- Interior Floor Drains
- Landscape/Outdoor Pesticide Use
- Refuse Areas
- Vehicle / Equipment Repair and Maintenance
- Fuel Dispensing Areas
- Fire Sprinkler Test Water
- Sidewalks and Parking Lots

V.B. Table of Sources and Permanent/Operational Controls

Table 5. Summary of Source Controls

Potential Source of Runoff Pollutants	Permanent Source Control BMPS	Operational Source Control BMPS
Onsite Storm Drain Inlets	Inlets that are accessible from driveways/walkaways will be marked with “No Dumping Drains to Bay” or a similar message.	Inlet markings will be inspected annually and replaced or, repainted as needed. Stormwater pollution prevention information will be provided to new site owners, lessees, or operators.
Interior Floor Drains	Interior floor drains will be plumbed to sanitary sewer.	Drains will be inspected and maintained annually to prevent blockages and overflow.
Landscape/Outdoor Pesticide Use	Native trees, shrubs, and ground cover on the site will be preserved to the maximum extent possible. Landscaping will be designed to minimize required irrigation and runoff, to promote surface infiltration, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. When feasible, pest-resistant plants will be selected, especially for locations adjacent to hardscape. Plants will be selected appropriate to site soils, slopes, climate, sun, wind, rain, landuse, air movement, ecological consistency, and plant interactions.	Owners, lessees, or operators will receive Integrated Pest Management (IMP) information. All open space landscaping is to be maintained by a professional landscaping contractor utilizing integrated pest management methods. Pesticides will only be applied by appropriately licensed contractors.

Potential Source of Runoff Pollutants	Permanent Source Control BMPS	Operational Source Control BMPS
Refuse Areas	Trash and recycling facilities will be enclosed with roof and wall. The facilities will also be screened to limit the access from the public and will include a sign stating, "Do Not Dump Hazardous Materials Here" or a similar message.	Receptacles will be inspected annually and replaced to prevent leakage. Spills will be cleaned up immediately.
Vehicle / Equipment Repair and Maintenance	Maintenance and repairs will only take place at designated areas away from storm drain conveyance facilities. Leaks of machinery fluids will be prevented thru; routinely inspections. Drip pans will be employed, and fluids will be properly disposed. EVAC equipment will be used to capture oils and retain for site removal.	No cars will be maintained, cleaned, or fueled onsite, except in designated areas where washwater is contained and treated. No vehicle fluids, hazardous materials, or rinse water from parts cleaning will be disposed down storm drains.
Fuel Dispensing Areas	Fuel areas will have an impermeable ground surface and covered with a roof.	Fueling area will be routinely inspected and maintained through a dry sweep.
Fire Sprinkler Test Water	Fire sprinkler test valves will be equipped with a means to divert test water to the sanitary sewer.	Inform owners, lessees, or operators to review CASQA fact sheet regarding hard metal accumulation and the BOD problem associated with sprinkler water.
Sidewalks and Parking Lots	Water runoff will be collected via storm drain pipes to bioretention areas for treatment.	Regular street sweeping to control pollutants. Overflow storm drain inlets will be checked regularly to clear debris.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The ownership and operation/maintenance responsibility for all stormwater facilities lies within Vallejo-Fairfield Developers, LLC. The "Stormwater Facilities O&M (Operation and Maintenance) Plan" for the Fairview at Northgate Commercial Project will be documented prior to the recording of the Final Map.

VI.B. Maintenance Requirements for Stormwater Facilities

- Prior to the start of the rainy season, in September of each year, inspect bioretention basin inlet and outlet structures for erosion or obstruction.
- Following a significant rain event of 0.5-inches or more, within a 24-hour period, perform the following for bioretention basins:
    - Check the facility for prolonged ponding.
    - Inspect the mulch layer for material movement, replace mulch and rake smooth if required.
    - Inspect basin side slopes for evidence of instability or scour and fix as necessary.
- Observe soil at the bottom of the bioretention basin for uniform percolation throughout. If portions of the basin do not drain within 48 hours after the end of a storm event, the soil should be tilled and replanted. Remove any debris or sediment accumulation.
- Examine the vegetation of the bioretention basin to ensure that it is vigorous and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. When mowing, remove no more than one-third the height of grasses. Verify that irrigation is adequate and not excessive. Replace dead plants and remove noxious and invasive vegetation.
- Abate any potential vectors by filling ground holes in and around the bioretention basin, and by ensuring there are no areas where water ponds longer than 48 hours following a storm event. If mosquito larvae are present and persistent, contact the Solano County Mosquito Abatement District for information and advice. Mosquito larvicides should be applied only when necessary, and only by a licensed individual or contractor.

VII. Construction Plan C.3 Checklist

The Construction Plan C.3 Checklist for the Commercial Project is shown in **Table 6** and is subject to additional updates.

Table 6. Summary of C.3 Checklist

Stormwater Control Plan Page #	BMP Description	See Plan Sheet #
6	Optimize site layout	-----
6	Disperse runoff	-----
7	Implement "Integrated Management Practices	-----
-----	Stormwater Control Plan	To be completed with the design phase

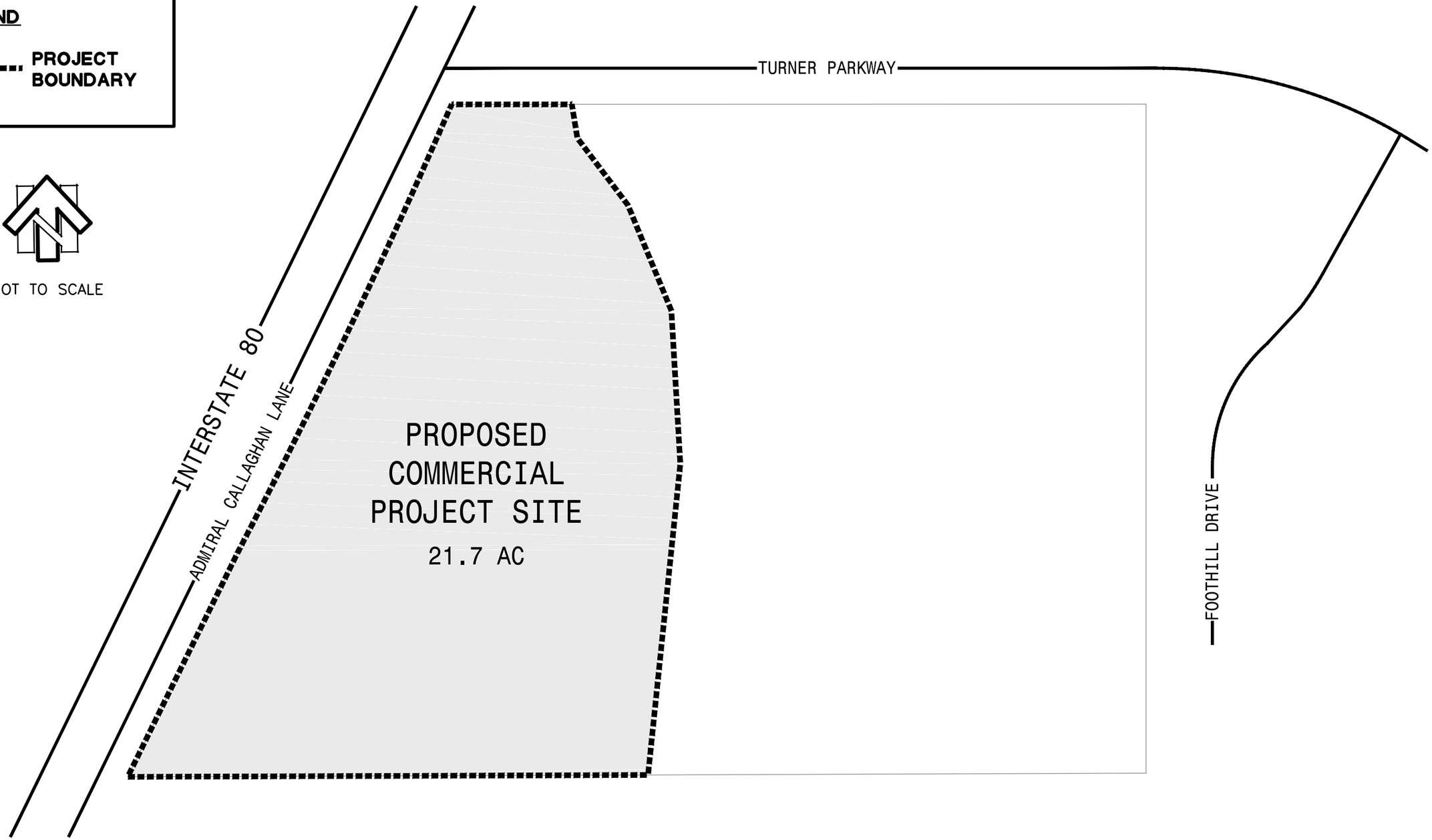
VIII. Certifications

The selection, sizing, and preliminary design of stormwater treatment and other control measures in the Stormwater Control Plan for the Fairview at Northgate Commercial Project meets the requirements of Regional Water Quality Control Board Order R2-2015-0049.

LEGEND

PROJECT BOUNDARY

NOT TO SCALE



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OFFICE	SCALE	DATE	JOB NO.

STORMWATER CONTROL PLAN REPORT

FAIRVIEW AT NORTHGATE
COMMERCIAL PROJECT

CITY OF VALLEJO CALIFORNIA

PROJECT VICINITY MAP

FIGURE 1

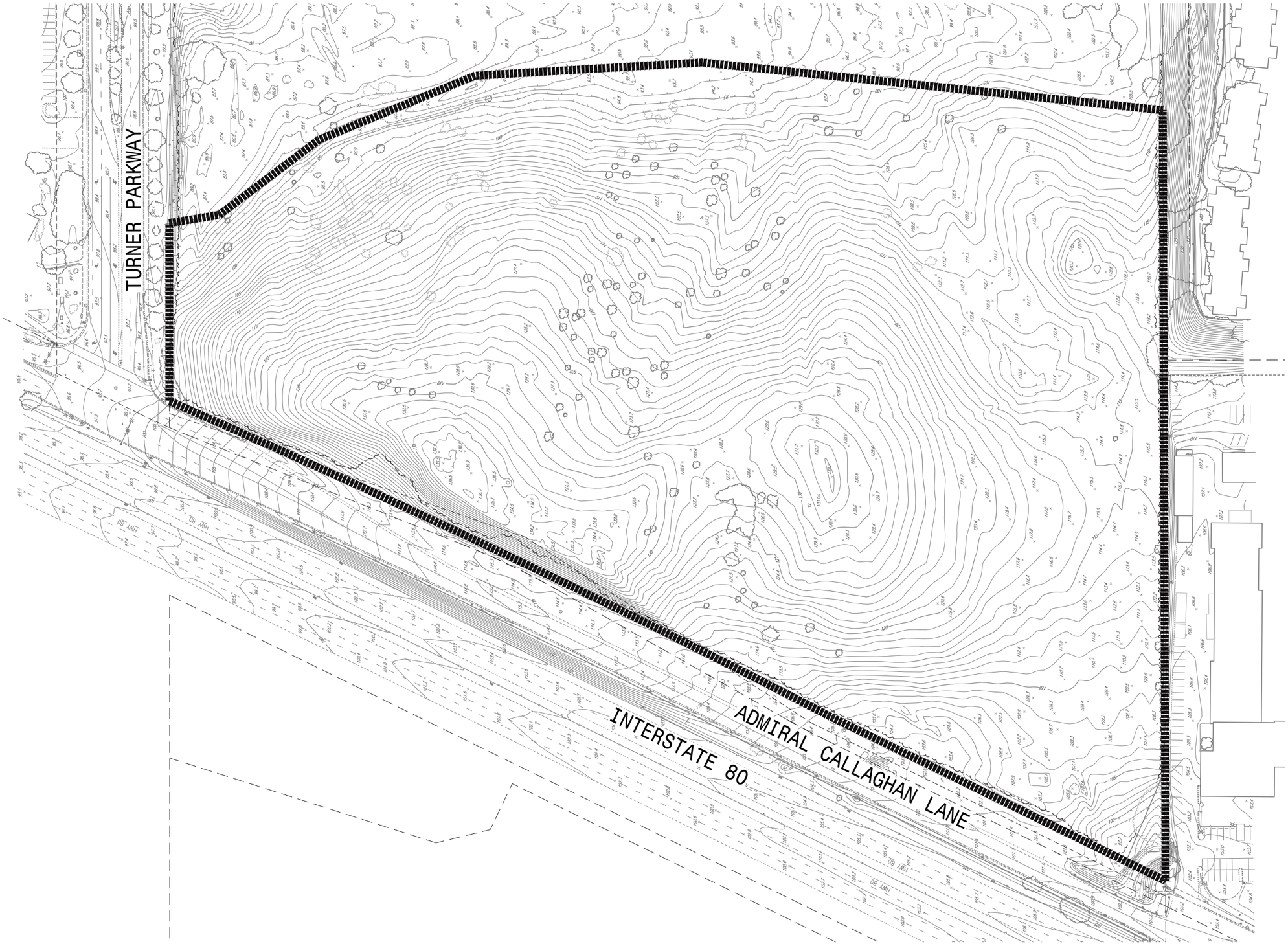
11-06-2018 7:48am Kenny Hyman P:\19899\PLN\EXH-P\C.3 STORMWATER CONTROL\SWCP-FIGURE 1. PROJECT VICINITY MAP COMMERCIAL PROJECT.DWG

LEGEND

PROJECT BOUNDARY

0 30 60 120

SCALE: 1"=60'



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FAIRVIEW AT NORTHGATE

COMMERCIAL PROJECT

CITY OF VALLEJO CALIFORNIA

EXISTING SITE MAP

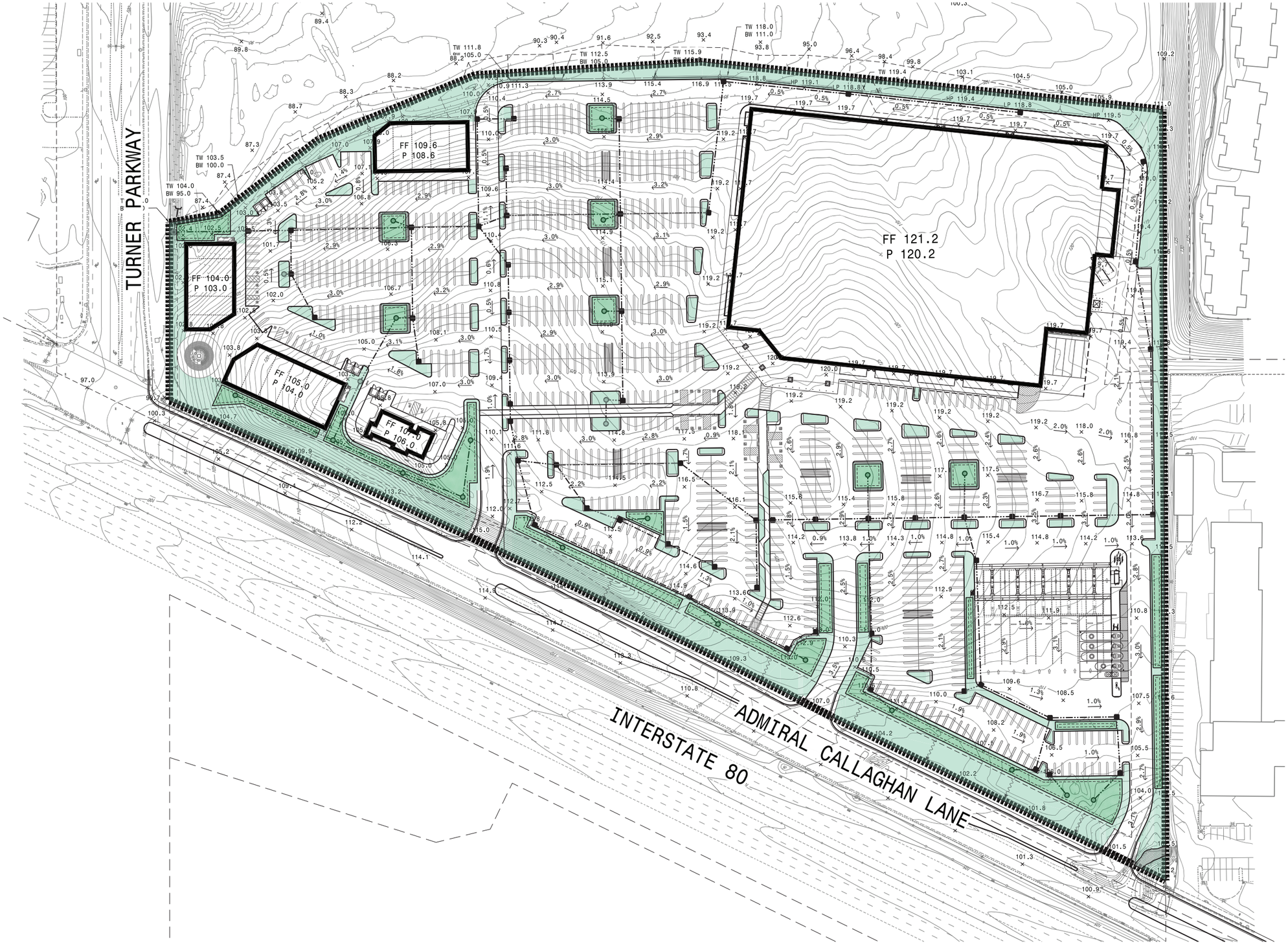
FIGURE 2

LEGEND

- DMA BOUNDARY
- IMPERVIOUS AREA
- PERVIOUS AREA
- BIORETENTION AREA

0 30 60 120
SCALE: 1"=60'

COMMERCIAL PROJECT AREA TOTALS	
LAND COVER	AREA (SF)
IMPERVIOUS	771,138
PERVIOUS	133,210
BIORETENTION	42,245
TOTAL	946,593



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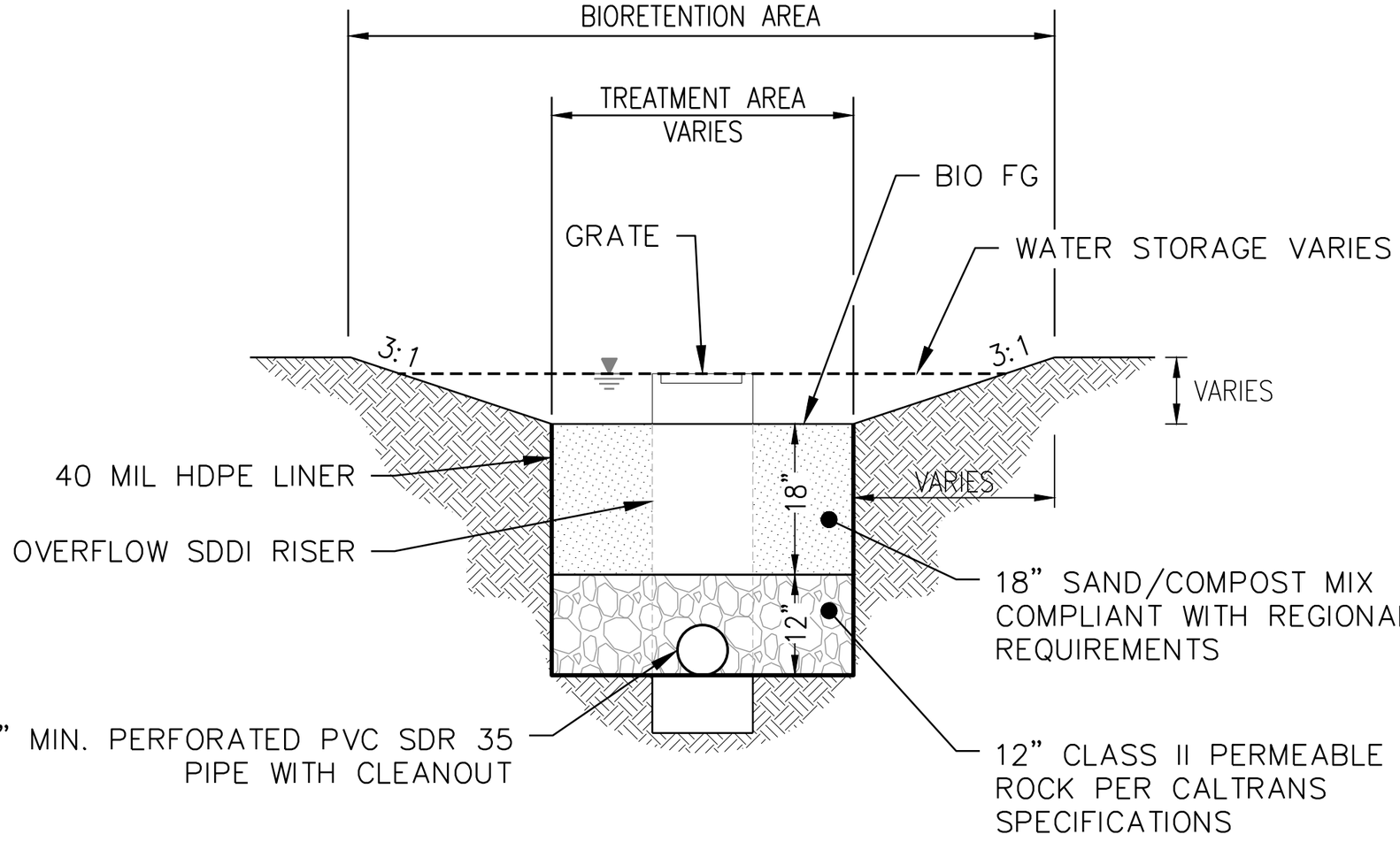
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STORMWATER CONTROL PLAN REPORT
FAIRVIEW AT NORTHGATE
COMMERCIAL PROJECT
CITY OF VALLEJO CALIFORNIA

DRAINAGE MANAGEMENT AREA MAP

FIGURE 3

11-06-2018 8:07am Kenny Hyman P:\19899\PLN\EXH-P\C.3 STORMWATER CONTROL\SWCP-FIGURE 3. DRAINAGE MANAGEMENT AREA MAP COMMERCIAL PROJECT.DWG



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STORMWATER CONTROL PLAN REPORT

FAIRVIEW AT NORTHGATE
COMMERCIAL PROJECT

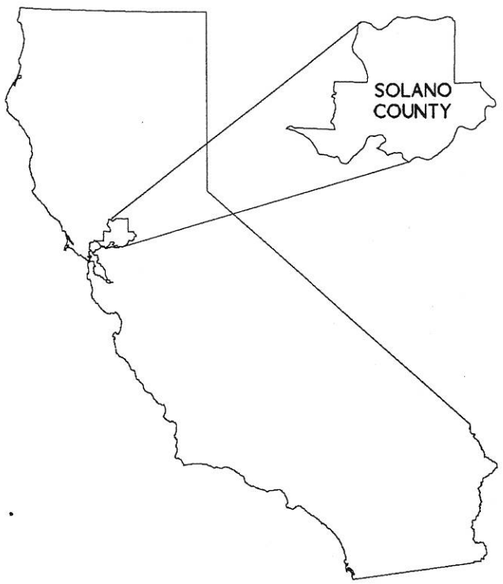
CITY OF VALLEJO CALIFORNIA

BIORETENTION FACILITY DETAIL

FIGURE 4

Appendix A.

Rainfall Isohyetal Map



COUNTY LOCATION

Figure 1

Solano County
Design Rainfall Study

ISOHYETAL MAP OF
SOLANO COUNTY
MEAN ANNUAL PRECIPITATION

N

0 10,000 20,000
SCALE IN FEET

NOTES:

1. SOURCE OF UNDERLYING MAPPING SHOWN HEREON IS DIGITIZED USGS QUAD MAPS AS SUPPLIED BY AMERICAN DIGITAL CARTOGRAPHY.
2. BOUNDARIES ARE APPROXIMATE AND HAVE BEEN ADJUSTED TO FIT USGS QUAD MAPS.
3. BASED ON OR CORRECTED TO THE 1951 TO 1980 BASE PERIOD.
4. ISOHYETAL LINES ARE FROM DESIGN RAINFALL FOR SOLANO COUNTY. PREPARED BY JAMES D. GOODRIDGE, SEPTEMBER 5, 1998.

LEGEND:

- ROADS & MINOR HIGHWAYS
- MAJOR HIGHWAYS
- 22 ISOHYETAL LINES
- DRAINAGE REGION BOUNDARY

WEST YOST & ASSOCIATES

CAD FILE: I:/074/98-04/04/074Fig-2-2.dwg CFG FILE: WYA2500.PCP_MRG DATE: 04-30-99 9:30am

Appendix B.

IMP Calculations

Project Name: Fairview Commercial Project
Project Type: Treatment and Flow Control
APN: 0081-490-010
Drainage Area: 946,593
Mean Annual Precipitation: 22.5

IV. Areas Draining to IMPs

IMP Name: Bio Basin A
IMP Type: Bioretention Facility
Soil Group: Bio Basin A

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA A1	771,138	Concrete or Asphalt	1.00	771,138
DMA A2	133,210	Landscape	0.70	93,247
			Total	864,385

IMP Sizing

	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.050	0.899	38,845	0
Surface Volume	0.042	0.899	32,630	0
Subsurface Volume	0.055	0.899	42,730	0
Maximum Underdrain Flow (cfs)				1.93
Orifice Diameter (in)				8.95

Report generated on 11/5/2018 12:00:00 AM by the Contra Costa Clean Water Program IMP Sizing Tool software (version 1.3.1.0).

STORMWATER CONTROL PLAN
for
FAIRVIEW AT NORTHGATE RESIDENTIAL PROJECT
COOKE PROPERTY, CITY OF VALLEJO

November 6, 2018

Prepared for:

Vallejo-Fairfield Developers, LLC

Prepared by:

MacKay & Somps Civil Engineers

5142 Franklin Drive, Suite B

Pleasanton, CA 94588

Contact: James F. Templeton

Phone: (925) 225-0690

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I. Project Data and Objective

The following Stormwater Control Plan Report for the Fairview at Northgate Residential Project, presented herein, follows the Contra Costa County Stormwater C.3 Guidebook, 7th edition. The Fairview at Northgate Residential Project is located in the City of Vallejo within Solano County, however, per the request of the City (email from Alea Gage dated October 25, 2018), the present analysis follows the Contra Costa County procedures. A summary of relevant project data is shown in **Table 1**.

The overall objective of this report is to demonstrate the Fairview at Northgate Residential Project fulfills C.3 compliance requirements set forth in the California Regional Water Quality Control Boards' Municipal Regional Permit.

The Residential Project must comply with Hydromodification Management Plan (HMP) requirements as the proposed development creates more than 1-acre of impervious land; the existing project site is pervious, barren land. Per the County Stormwater C.3 Guidebook, compliance with HMP may be met through one of two options: (i) apply "LID Design Guide" in Chapter 3 of the C.3 Guidebook to satisfy both treatment and flow-control requirements or (ii) apply a continuous simulation hydrologic modeling analysis to verify post-project flows match pre-project flows for 10% of 2-year peak up to 10-year peak. To satisfy HMP for the Fairview at Northgate Residential Project, the former option – "LID Design Guide" will be applied.

Table 1. Project Data

Project Name/Number	Fairview at Northgate Residential Project
Application Submittal Date	November 6, 2018
Project Location	APN 0081-490-010 City of Vallejo, Solano County, CA 94591
Name of Applicant	Vallejo-Fairfield Developers, LLC
Project Phase No.	N/A
Project Type and Description	LDR (Low Density Residential)
Project Watershed	Blue Rock Springs Creek
Total Project Site Area [1]	23.8 acres (1,037,167 sf)
Total Area of Land Disturbed [1]	23.8 acres (1,037,167 sf)
Total New Impervious Surface Area	610,205 sf
Total Replaced Impervious Surface Area	0 sf
Total Pre-Project Impervious Surface Area	0 sf

Total Post-Project Impervious Surface Area	610,205 sf
50% Rule [2]	Applies
Project Density	Floor Area Ratio 0.40 (maximum)
Applicable Special Project Categories	None
Percent LID and non-LID treatment	100% LID Treatment
HMP Compliance [3]	Does Apply

Notes:

[1] Refer to Figure 2 for "Total Project Site Area" boundary of the Residential Project

[2] 50% rule applies if:
Total Replaced Impervious Surface Area > 0.5 x Pre-Project Impervious Surface Area

[3] HMP applies if:
(Total New Impervious Surface Area + Total Replaced Impervious Surface Area) ≥ 1 acre

II. Setting

II.A. Project Overview

The proposed 23.8-acre "Residential Project" site is located in the City of Vallejo within Solano County, California. The project is east of the Interstate 80 freeway and is bounded by Turner Parkway on the north and Admiral Callaghan Lane on the east. A vicinity map for the Fairview at Northgate Residential Project is shown on **Figure 1**.

The proposed project development will be utilized for a low-density residential development, consisting of 86 lots designated as single-family and 92 lots designated as paseo-loaded. Approximately 102,000 square feet of undeveloped land on the western edge of the site will serve as a park-site and a region for two stormwater quality treatment facilities.

II.B. Existing Site Condition

The existing 23.8-acre site is composed of natural open space with low-lying vegetation and minimal tree canopy cover. Since the late 1930s, the site has been undeveloped and was used for grazing activities until the early 1970s.

In terms of physiographic features, the site soils are classified as elastic silt (MH), lean clay (CL), clayey sand (SC), silty clay (CL), siltstone, and sandstone. Based on preliminary subsurface exploration performed by the geotechnical (ENGEO), the site does not have perched groundwater at pit depths of 10-feet and the site presents a low seismic hazard risk.

Elevations for the existing site range from 89 ft to 124 ft (NAVD88), and surface water generally flows to the northwest towards a natural drainage swale which conveys flows towards Turner Parkway. Runoff ultimately discharges into Blue Rock Springs Creek. An existing site map for the Residential Project location is shown on **Figure 2**.

II.C. Constraints and Opportunities for Stormwater Control

The Residential Project has the following constrains and opportunities:

Constraints

- The composition of the existing silty soils and clayey sands on the project site translates to lower permeability and higher runoff potential. For stormwater treatment facilities, soils with moderate to high infiltration rates are ideal.
- The layout of the Residential Project requires usage of a few large, close proximity stormwater treatment basins as opposed to several small, spread out stormwater treatment basins.

Opportunities

- About 40% of the residential site is designated as softscape cover, including trees, shrubs, and grasses. These strategically placed landscaped corridors significantly benefit the dispersal of runoff from impervious surfaces.
- According to the preliminary geotechnical investigation, there is no high groundwater table, no liquefaction susceptibility, and no high risk of uplift/subsidence. In general, the existing site soil conditions are moderately adequate for the proposed stormwater treatment basin facilities.

III. Low Impact Development Design Strategies

III.A. Site Design Optimization

There are no existing natural drainage features within the project boundary, however, stormwater runoff drains west to a 5.7-acre off-site open space, natural drainage corridor which directs flows north, and eventually west along Turner Parkway before discharging into Blue Rock Springs Creek. The proposed residential site drainage generally mimics the watercourse paths of the existing site condition.

The Residential Project incorporates a stormwater treatment facility within a park-site designated as a community focal point. For aesthetic purposes, suitable deciduous trees and ground plantings will be placed within each basin facility area. The park-site basin facility will ideally have gentle side-slopes and a shallow depth as a safety precaution for nearby pedestrians accessing the park.

III.B. Permeable Pavements

Presently, the Residential Project does not plan to incorporate permeable pavements into the site design.

III.C. Dispersal of Runoff to Pervious Areas

About 40% of the residential site will be pervious landscape, which presents a highly-beneficial scenario for flow dispersal from impervious runoff. A large portion of runoff from residential buildings will surface drain to lawns and vegetated regions prior to becoming street flow, and eventually pipe flow routed to the designated stormwater treatment facility.

III.D. Integrated Management Practices

The proposed Residential Project will implement "Integrated Management Practices to treat a total drainage area of 1,037,167 square feet (23.8-acre) with an impervious ratio of 58.8%. A total of two bioretention treatment facilities, at the northwest corner of the site, provide a combined treatment area of 42,640 square feet. The bioretention facilities are designed to meet both treatment and flow-control requirements.

IV. Documentation of Drainage Design

IV.A. Drainage Management Area Overview

To simplify the IMP sizing analysis, the Residential Project was delineated into a single "Drainage Management Area" (DMA); refer to **Figure 3**. Further division of the DMA is not warranted given the current stage of the project and the present project objectives.

IV.A.1. Summary of Drainage Management Area

For the Residential Project, a summary of impervious, pervious, and bioretention areas is shown in **Table 2**. The total area of bioretention is based on an iterative approach using the Contra Costa County IMP Calculator program.

Table 2. Drainage Management Areas for Residential Project

DMA Name	Drainage Area (sf)	Impervious Surface: Concrete or Asphalt (sf)	Pervious Surface: Landscape, Soil Group D (sf)	Total Bioretention Facility Area (sf)
DMA "A"	1,037,167	610,205	384,322	42,640

IV.A.2. Drainage Management Area Description

DMA "A" for the Residential Project, totaling 1,037,167 square feet, includes 610,205 square feet of impervious cover and 384,322 square feet of pervious landscape. The impervious area includes approximately 353,685 square feet of single-family building area and 256,520 square feet of streets and sidewalks. Untreated stormwater is conveyed in street gutters and captured by a series of catch basin inlets which route flows via the untreated stormdrain system to two bioretention facilities located at the northwest corner of the residential site. The precise conveyance details and hydraulic design of the proposed treated and untreated stormdrain system have not been finalized, but will be completed with the preparation of construction documents.

IV.B. Integrated Management Practices

The bioretention treatment facilities for the Fairview at Northgate Residential Project will be designed and constructed per the requirements of the Contra Costa County Stormwater C.3 Guidebook, 7th edition. A summary of these requirements are as follows:

- Each layer built flat, level, and to the elevations specified in the plans:
  - Bottom of Gravel Layer (BGL)
  - Top of Gravel Layer (TGL)
  - Top of Soil Layer (TSL)

    - Overflow Grate
    - Facility Rim
- 12 inches Class 2 permeable, Caltrans specification 68-2.02F(3).
- 18 inches sand/compost mix meeting the specifications approved by the Regional Water Quality Control Board in April 2016.
- 4-inch minimum diameter PVC SDR 35 perforated pipe underdrain, installed with the invert at the top of the Class 2 permeable layer with holes facing down, and connected to the overflow structure at that same elevation.
- 6-inch-deep reservoir between top of soil elevation and overflow grate elevation
- Concrete drop inlet with frame overflow structure, with grate set to specified elevation, connected to storm drain in main street.
- Plantings selected for suitability to climate and location, bioretention soil media (well-drained, low-fertility), and for water conservation.
- Irrigation system on a separate zone, with drip emitters and "smart" irrigation controllers.

A typical detail view for the bioretention treatment facility is shown on **Figure 4**.

IV.C. Tabulation and Sizing Calculations

The "Integrated management Practices" sizing calculations were performed by applying the IMP Calculator program developed by the County (Contra Costa Clean Water Program). The program computes the minimum IMP area according to the following relationships:

$$\text{Min. IMP Area or Volume} = \sum \begin{pmatrix} \text{DMA} \\ \text{Square} \\ \text{Footage} \end{pmatrix} \times \begin{pmatrix} \text{DMA} \\ \text{Runoff} \\ \text{Factor} \end{pmatrix} \times \begin{pmatrix} \text{IMP} \\ \text{Sizing} \\ \text{Factor} \end{pmatrix} \times \begin{pmatrix} \text{Rain} \\ \text{Adjustment} \\ \text{Factor} \end{pmatrix}$$

$$\begin{matrix} \text{IMP Sizing Factor} \\ \text{(For Bioretention)} \end{matrix} = \begin{cases} 0.07 & \text{for Soil Group A} \\ 0.11 & \text{for Soil Group B} \\ 0.06 & \text{for Soil Group C} \\ 0.05 & \text{for Soil Group D} \end{cases}$$

$$\text{Rain Adjustment Factor} = \frac{-0.0022 \times \left(\text{MAP}_{\text{project site}} - 20.2\right) + 0.05}{0.05}$$

Table 3 provides an overview of the IMP design input values. A mean annual precipitation (MAP) of 22.5 inches for the project site is determined from the Solano County rainfall isohyetal map, as shown in **Appendix A**. The IMP design calculations apply Soil Group "D", as this classification is representative of the initial subsurface exploration performed by ENGEO. The geotechnical investigation revealed near-surface soils with high-fines and insubstantial permeability values, indicating low stormwater infiltration rates. Additionally, the IMP design calculations are performed for "Treatment Plus Flow Control" as hydromodification management applies for the Residential Project. Program output from the County IMP Calculator are included in **Appendix B**, and the results are summarized in **Table 4**.

Table 3. IMP Design Input for Residential Project

Total Impervious Area	610,205 sf (Concrete or Asphalt)
Total Pervious Area	384,322 sf (Landscape)
Mean Annual Precipitation	22.5 inches
NRCS Soil Group	"D"
IMPs Designed For	Treatment Plus Flow Control

Table 4. IMP Design Results for Residential Project

IMP Name: Bio Basin A
IMP Type: Bioretention Facility
Drainage Area: 1,037,167 sf
Mean Annual Precipitation: 22.5 inches
IMPs Designed for: Treatment Plus Flow Control
Soil Type: "D"

DMA Name	DMA Area (sf)	Post-Project Surface Type	DMA Runoff Factor	(DMA Area) x (Runoff Factor)
DMA A1	610,205	Concrete or Asphalt	1.00	610,205
DMA A2	384,322	Landscape	0.70	269,025
			Total =	879,230

IMP Sizing Factor	Rain Adjustment Factor	Minimum Area (sf)
0.050	0.899	39,513

The Residential Project proposes a total bioretention facility area of 42,640 square feet, and the IMP Calculator program computed a required minimum area of 39,513 square feet. As the Residential Project moves into the design phase, the proposed bioretention facilities will be refined.

V. Source Control Measures

V.A. Site Activities and Potential Sources of Pollutants

The Fairview at Northgate Residential Project will create potential sources of stormwater pollutants, and includes the following sources to be controlled:

- Onsite Storm Drain Inlets
- Interior Floor Drains
- Landscape/Outdoor Pesticide Use
- Pools, Spas, Ponds, Decorative Fountains, and Other Water Features
- Sidewalks and Streets

V.B. Table of Sources and Permanent/Operational Controls

Table 5. Summary of Source Controls

Potential Source of Runoff Pollutants	Permanent Source Control BMPS	Operational Source Control BMPS
Onsite Storm Drain Inlets	Inlets that are accessible from driveways/walkaways will be marked with “No Dumping Drains to Bay” or a similar message.	Inlet markings will be inspected annually and replaced or, repainted as needed. Stormwater pollution prevention information will be provided to new site owners, lessees, or operators.
Interior Floor Drains	Interior floor drains will be plumbed to sanitary sewer.	Drains will be inspected and maintained annually to prevent blockages and overflow.
Landscape/Outdoor Pesticide Use	Native trees, shrubs, and ground cover on the site will be preserved to the maximum extent possible. Landscaping will be designed to minimize required irrigation and runoff, to promote surface infiltration, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. When feasible, pest-resistant plants will be selected, especially for locations adjacent to hardscape. Plants will be selected appropriate to site soils, slopes, climate, sun, wind, rain, landuse, air movement, ecological consistency, and plant interactions.	Residents will receive Integrated Pest Management (IMP) information. All open space landscaping is to be maintained by a professional landscaping contractor utilizing integrated pest management methods. Pesticides will only be applied by appropriately licensed contractors.
Pools, Spas, Ponds, Decorative Fountains, and Other Water Features	Pools will be plumbed to the sanitary sewer per local municipality requirements.	Educate residents about the “Fountain and Pool Maintenance” guidelines of the CASQA Stormwater Quality Handbook.

Potential Source of Runoff Pollutants	Permanent Source Control BMPS	Operational Source Control BMPS
Sidewalks and Streets	Water runoff will be collected via storm drain pipes to bioretention areas for treatment.	Regular street sweeping to control pollutants. Overflow storm drain inlets will be checked regularly to clear debris.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The ownership and operation/maintenance responsibility for all stormwater facilities lies within Vallejo-Fairfield Developers, LLC. The "Stormwater Facilities O&M (Operation and Maintenance) Plan" for the Fairview at Northgate Residential Project will be documented prior to the recording of the Final Map.

VI.B. Maintenance Requirements for Stormwater Facilities

- Prior to the start of the rainy season, in September of each year, inspect bioretention basin inlet and outlet structures for erosion or obstruction.
- Following a significant rain event of 0.5-inches or more, within a 24-hour period, perform the following for bioretention basins:
    - Check the facility for prolonged ponding.
    - Inspect the mulch layer for material movement, replace mulch and rake smooth if required.
    - Inspect basin side slopes for evidence of instability or scour and fix as necessary.
- Observe soil at the bottom of the bioretention basin for uniform percolation throughout. If portions of the basin do not drain within 48 hours after the end of a storm event, the soil should be tilled and replanted. Remove any debris or sediment accumulation.
- Examine the vegetation of the bioretention basin to ensure that it is vigorous and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris, prune large shrubs or trees, and mow turf areas. When mowing, remove no more than one-third the height of grasses. Verify that irrigation is adequate and not excessive. Replace dead plants and remove noxious and invasive vegetation.
- Abate any potential vectors by filling ground holes in and around the bioretention basin, and by ensuring there are no areas where water ponds longer than 48 hours following a storm event. If mosquito larvae are present and persistent, contact the Solano County Mosquito Abatement District for information and advice. Mosquito larvicides should be applied only when necessary, and only by a licensed individual or contractor.

VII. Construction Plan C.3 Checklist

The Construction Plan C.3 Checklist for the Residential Project is shown in **Table 6** and is subject to additional updates.

Table 6. Summary of C.3 Checklist

Stormwater Control Plan Page #	BMP Description	See Plan Sheet #
6	Optimize site layout	-----
6	Disperse runoff	-----
7	Implement “Integrated Management Practices	-----
-----	Stormwater Control Plan	To be completed with the design phase

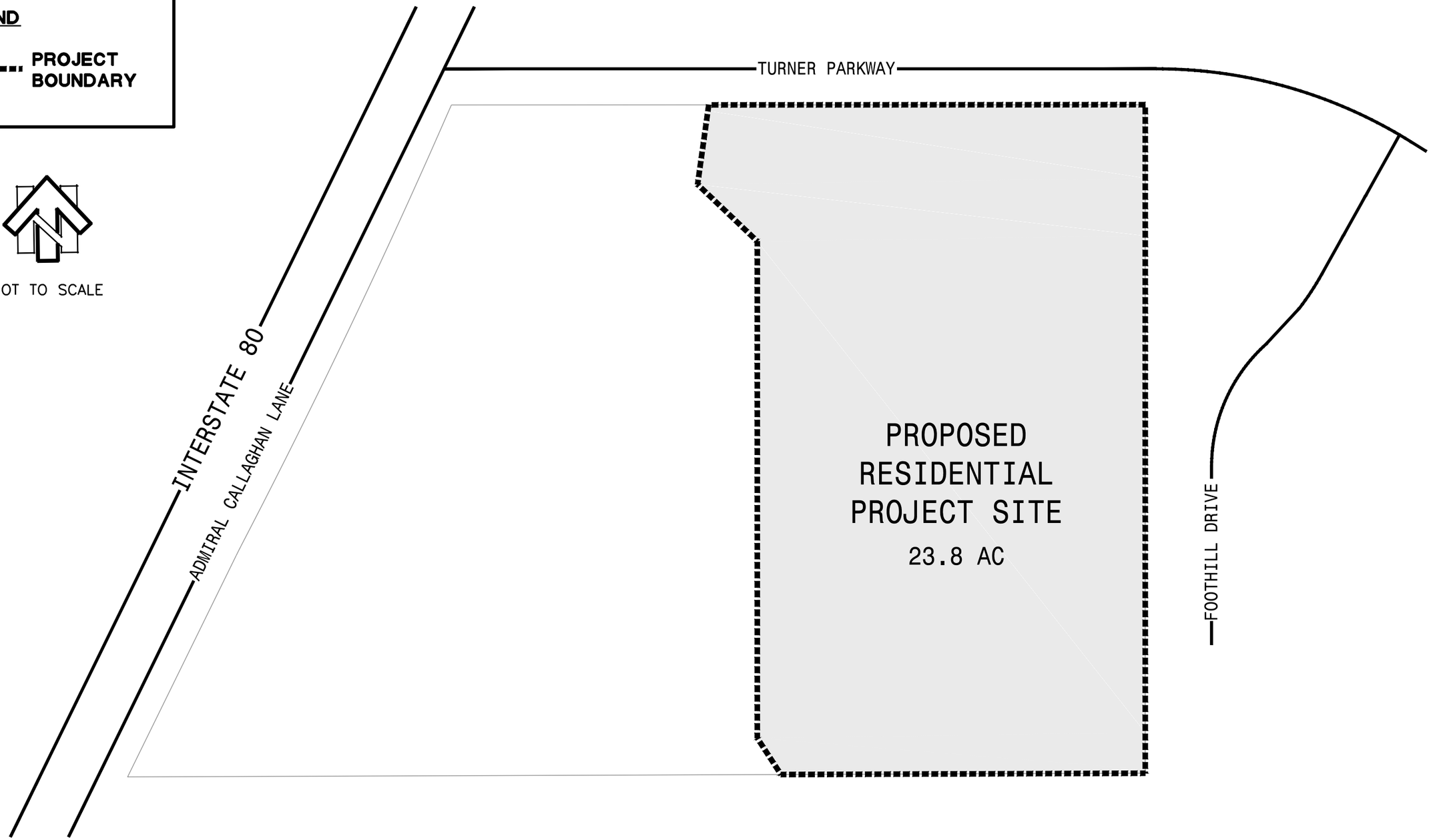
VIII. Certifications

The selection, sizing, and preliminary design of stormwater treatment and other control measures in the Stormwater Control Plan for the Fairview at Northgate Residential Project meets the requirements of Regional Water Quality Control Board Order R2-2015-0049.

LEGEND

PROJECT BOUNDARY

NOT TO SCALE



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STORMWATER CONTROL PLAN REPORT

FAIRVIEW AT NORTHGATE
RESIDENTIAL PROJECT

CITY OF VALLEJO CALIFORNIA

PROJECT VICINITY MAP

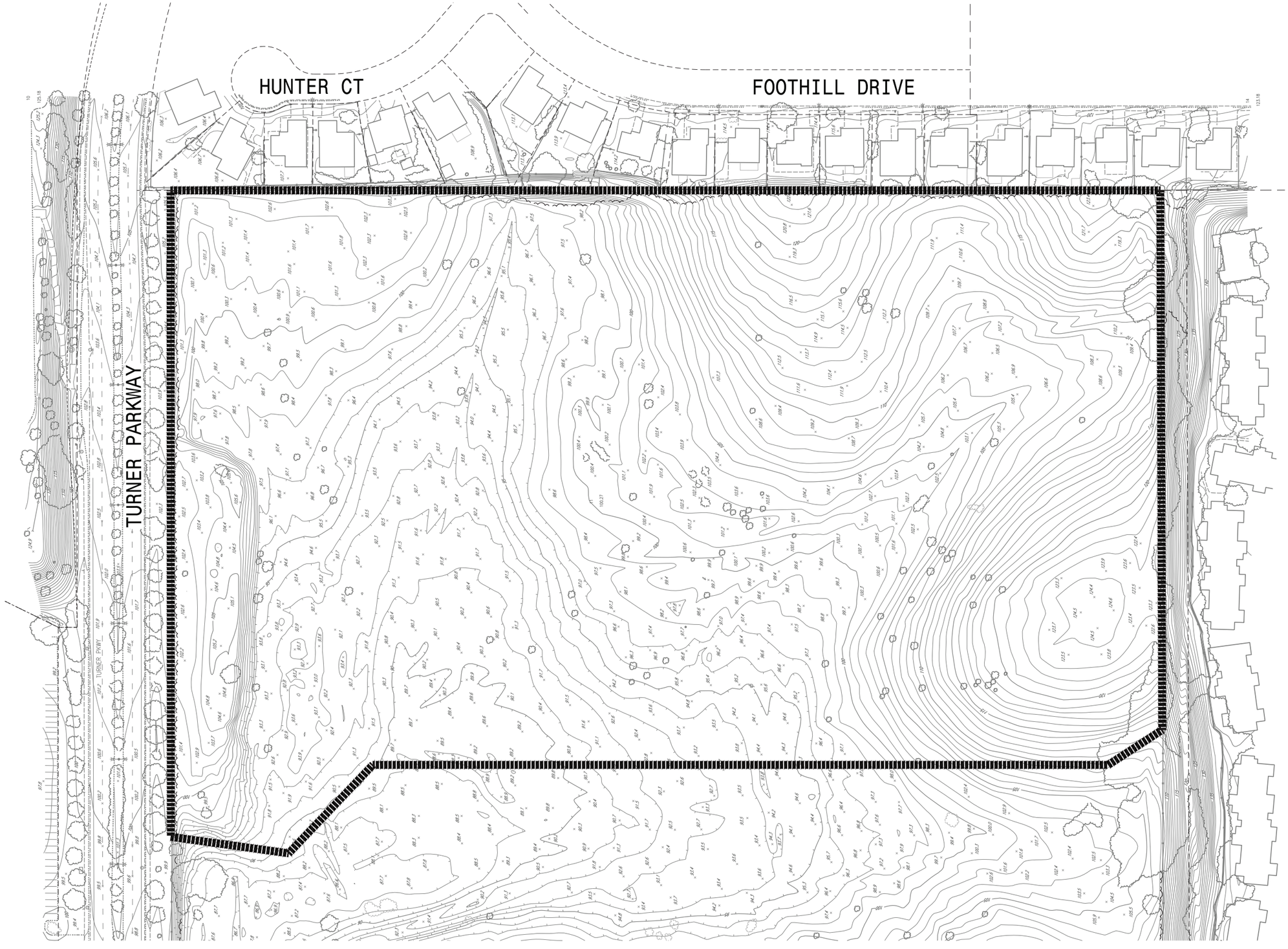
FIGURE 1

LEGEND

PROJECT BOUNDARY

0 30 60 120

SCALE: 1"=60'



MacKAY & SOMPS	STORMWATER CONTROL PLAN REPORT	EXISTING SITE MAP	FIGURE
ENGINEERS PLANNERS SURVEYORS 1proj 1428 FRANKLIN DR, PLEASANTON, CA 94588 (925)225-0690	FAIRVIEW AT NORTHGATE RESIDENTIAL PROJECT		2
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PLEASANTON OFFICE | 1"=60' SCALE | 11-06-2018 DATE | 19899.000 JOB NO.			

11-06-2018 7:53am Kenny Hyman P:\19899\PLN\EXH-P\C.3 STORMWATER CONTROL\SWCP-FIGURE 2. EXISTING SITE MAP RESIDENTIAL PROJECT.DWG

LEGEND

- DMA BOUNDARY
- IMPERVIOUS AREA
- PERVIOUS AREA
- BIORETENTION AREA

0 30 60 120
SCALE: 1"=60'

RESIDENTIAL PROJECT AREA TOTALS	
LAND COVER	AREA (SF)
IMPERVIOUS	610,205
PERVIOUS	384,322
BIORETENTION	42,640
TOTAL	1,037,167

HUNTER CT

FOOTHILL DRIVE

TURNER PARKWAY

RESIDENTIAL LOTS: IMPERVIOUS AND PERVIOUS TOTALS							
LOT TYPE	LOT DESCRIPTION	TOTAL LOT COUNT	BUILDING ENVELOPE AREA (SF)	BUILDING ENVELOPE EFFECTIVE IMPERVIOUS (%)	CUMULATIVE IMPERVIOUS LOT AREA [1] (SF)	CUMULATIVE TOTAL LOT AREA (SF)	CUMULATIVE PERVIOUS LOT AREA [2] (SF)
A	42' X 85'	86	2,450	90%	189,630	354,310	164,680
B	50' X 65' MID	66	1,763	100%	116,358	188,615	72,257
C	50' X 65' END	26	1,835	100%	47,697	74,590	26,893
				TOTALS =	353,685	617,515	263,830

NOTES:
[1] (CUMULATIVE IMPERVIOUS LOT AREA) =
(TOTAL LOT COUNT) X (BUILDING ENVELOPE AREA) X (BUILDING ENVELOPE EFFECTIVE IMPERVIOUS)
[2] (CUMULATIVE PERVIOUS LOT AREA) =
(CUMULATIVE TOTAL LOT AREA) - (CUMULATIVE IMPERVIOUS LOT AREA)

- RESIDENTIAL LOT TYPE A
- RESIDENTIAL LOT TYPE B
- RESIDENTIAL LOT TYPE C

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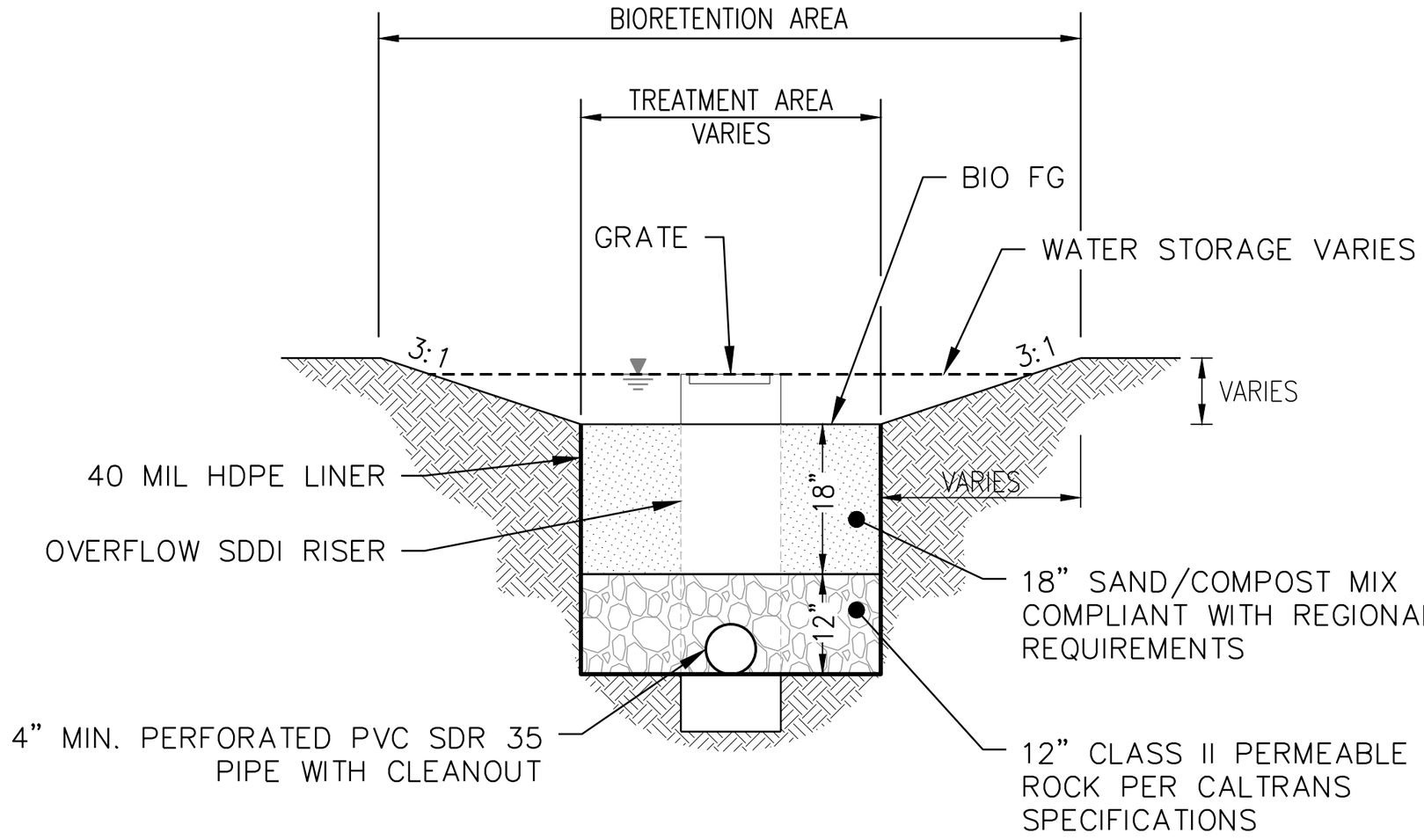
FAIRVIEW AT NORTHGATE
RESIDENTIAL PROJECT

CITY OF VALLEJO CALIFORNIA

DRAINAGE MANAGEMENT AREA MAP

FIGURE 3

11-06-2018 8:12am Kenny Hyman P:\19899\PLN\EXH-P\C.3 STORMWATER CONTROL\SWCP-FIGURE 3. DRAINAGE MANAGEMENT AREA MAP RESIDENTIAL PROJECT.DWG



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STORMWATER CONTROL PLAN REPORT

FAIRVIEW AT NORTHGATE
RESIDENTIAL PROJECT

CITY OF VALLEJO CALIFORNIA

BIORETENTION FACILITY DETAIL

FIGURE 4

Appendix A.

Rainfall Isohyetal Map



COUNTY LOCATION

Figure 1

Solano County
Design Rainfall Study

ISOHYETAL MAP OF
SOLANO COUNTY
MEAN ANNUAL PRECIPITATION

N

0 10,000 20,000
SCALE IN FEET

NOTES:

1. SOURCE OF UNDERLYING MAPPING SHOWN HEREON IS DIGITIZED USGS QUAD MAPS AS SUPPLIED BY AMERICAN DIGITAL CARTOGRAPHY.
2. BOUNDARIES ARE APPROXIMATE AND HAVE BEEN ADJUSTED TO FIT USGS QUAD MAPS.
3. BASED ON OR CORRECTED TO THE 1951 TO 1980 BASE PERIOD.
4. ISOHYETAL LINES ARE FROM DESIGN RAINFALL FOR SOLANO COUNTY. PREPARED BY JAMES D. GOODRIDGE, SEPTEMBER 5, 1998.

LEGEND:

- ROADS & MINOR HIGHWAYS
- MAJOR HIGHWAYS
- 22 ISOHYETAL LINES
- DRAINAGE REGION BOUNDARY

WEST YOST & ASSOCIATES

CAD FILE: I:/074/98-04/04/074Fig-2-2.dwg CFG FILE: WYA2500.PCP_MRG DATE: 04-30-99 9:30am

Appendix B.

IMP Calculations

Project Name: Fairview Residential Project
Project Type: Treatment and Flow Control
APN: 0081-490-010
Drainage Area: 1,037,167
Mean Annual Precipitation: 22.5

IV. Areas Draining to IMPs

IMP Name: Bio Basin A
IMP Type: Bioretention Facility
Soil Group: Bio Basin A

DMA Name	Area (sq ft)	Post Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor
DMA A1	610,205	Concrete or Asphalt	1.00	610,205
DMA A2	384,322	Landscape	0.70	269,025
			Total	879,230

IMP Sizing

	IMP Sizing Factor	Rain Adjustment Factor	Minimum Area or Volume	Proposed Area or Volume
Area	0.050	0.899	39,513	0
Surface Volume	0.042	0.899	33,191	0
Subsurface Volume	0.055	0.899	43,464	0
Maximum Underdrain Flow (cfs)				2.12
Orifice Diameter (in)				9.38

Report generated on 11/5/2018 12:00:00 AM by the Contra Costa Clean Water Program IMP Sizing Tool software (version 1.3.1.0).

Appendix I

Noise Measurement Field Sheets and Traffic Noise Calculations

Noise Measurement Field Data

Project:	Fairview at Northgate (Vallejo)	**Job Number:**	
Site No.:	#1	**Date:**	12/11/2018
Analyst:	Noemi Wyss	**Time:**	11:16 AM
Location:	Hunter Court		
Noise Sources:	Cars on Foothill/ Hunter Court, birds, people talking		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
55.4	55.3	65.1	91.4

Equipment	
Sound Level Meter:	SoundPro DL
Calibrator:	QC-10
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	46
Wind (mph):	6 mph
Sky:	Clear
Bar. Pressure:	30.22
Humidity:	89%

Photo:



Kimley»Horn

Noise Measurement Field Data

Project:	Fairview at Northgate (Vallejo)	**Job Number:**	
Site No.:	#2	**Date:**	12/11/2018
Analyst:	Noemi Wyss	**Time:**	11:40 AM
Location:	Apartment Complex (Sundance Apartment Homes)		
Noise Sources:	People talking, some cars in parking lot, machinery		
Comments:	Someone came to talk to me around minute 9		

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
56.0	55.3	79.8	80.1

Equipment	
Sound Level Meter:	SoundPro DL
Calibrator:	QC-10
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	48
Wind (mph):	5
Sky:	Clear
Bar. Pressure:	30.17
Humidity:	89%

Photo:



Kimley»Horn

Noise Measurement Field Data

Project:	Fairview at Northgate (Vallejo)	**Job Number:**	
Site No.:	#3	**Date:**	12/11/2018
Analyst:	Noemi Wyss	**Time:**	12:20 PM
Location:	Turner Parkway and Admiral Callaghan Lane		
Noise Sources:	I-80, Turner, Callaghan --> constant vehicular noise		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
67.3	60.1	75.9	98.6

Equipment	
Sound Level Meter:	SoundPro DL
Calibrator:	QC-10
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	50
Wind (mph):	6
Sky:	Clear
Bar. Pressure:	30.14
Humidity:	67%

Photo:



Kimley»Horn

Noise Measurement Field Data

Project:	Fairview at Northgate (Vallejo)	**Job Number:**	
Site No.:	#4	**Date:**	12/11/2018
Analyst:	Noemi Wyss	**Time:**	12:42 PM
Location:	Rotary Street near Safeway/ commercial center		
Noise Sources:	Rotary, shopping center, I-80, Callaghan Lane		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
62.8	55.3	80.2	98.2

Equipment	
Sound Level Meter:	SoundPro DL
Calibrator:	QC-10
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	55
Wind (mph):	6
Sky:	Clear
Bar. Pressure:	30.14
Humidity:	67%

Photo:



Kimley»Horn

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Fairview at Northgate
Project Number: 097089103
Scenario: Existing
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

					Median	ADT	Speed	Alpha	Vehicle Mix Medium	Vehicle Mix Heavy	CNEL at	Distance from Centerline of Roadway to Contour 70 CNEL	65 CNEL	60 CNEL	55 CNEL
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet					
1	Admiral Callaghan Lane	Columbus Pkwy to Auto Club Dr	6	5	20,725	35	0	2.0%	1.0%	64.1	-	80	254	804
2	Admiral Callaghan Lane	Auto Club Dr to Plaza Dr	4	8	17,910	35	0	2.0%	1.0%	63.3	-	67	213	673
3	Admiral Callaghan Lane	Plaza Dr to Vallejo Corners	4	12	9,405	35	0	2.0%	1.0%	60.5	-	-	112	355
4	Admiral Callaghan Lane	Vallejo Corners to Target Driveway	4	12	11,400	35	0	2.0%	1.0%	61.3	-	-	136	431
5	Admiral Callaghan Lane	Target Driveway to Turner Parkway	4	12	11,520	35	0	2.0%	1.0%	61.4	-	-	138	435
6	Admiral Callaghan Lane	Turner Parkway to Rotary Way	2	2	16,680	35	0	2.0%	1.0%	62.9	-	61	194	613
7	Admiral Callaghan Lane	Rotary Way to I-80 Ramps	4	15	18,175	35	0	2.0%	1.0%	63.4	-	69	218	689
8	Plaza Drive	Admiral Callaghan Lane to Gateway Plaza	4	15	10,620	35	0	2.0%	1.0%	61.0	-	-	127	403
9	Plaza Drive	Gateway Plaza to Costco Driveway	4	15	7,070	35	0	2.0%	1.0%	59.3	-	-	85	268
10	Plaza Drive	Costco Driveway to Turner Parkway	4	15	10,280	35	0	2.0%	1.0%	60.9	-	-	123	390
11	Turner Parkway	Admiral Callaghan Lane to Plaza Drive	4	11	7,500	40	0	2.0%	1.0%	60.8	-	-	120	380
12	Redwood Parkway	West of Admiral Callaghan Lane	5	11	16,140	35	0	2.0%	1.0%	62.9	-	62	196	619
13	Redwood Parkway	East of Admiral Callaghan Lane	4	11	13,020	35	0	2.0%	1.0%	61.9	-	-	155	491

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Fairview at Northgate
Project Number: 097089103
Scenario: Existing Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

										Vehicle Mix		Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Admiral Callaghan Lane	Columbus Pkwy to Auto Club Dr	6	5	20,267	35	0	2.0%	1.0%	64.0	-	79	248	786
2	Admiral Callaghan Lane	Auto Club Dr to Plaza Dr	4	8	17,457	35	0	2.0%	1.0%	63.2	-	66	207	656
3	Admiral Callaghan Lane	Plaza Dr to Vallejo Corners	4	12	13,095	35	0	2.0%	1.0%	61.9	-	-	156	495
4	Admiral Callaghan Lane	Vallejo Corners to Target Driveway	4	12	15,090	35	0	2.0%	1.0%	62.6	-	57	180	570
5	Admiral Callaghan Lane	Target Driveway to Turner Parkway	4	12	15,210	35	0	2.0%	1.0%	62.6	-	57	182	574
6	Admiral Callaghan Lane	Turner Parkway to Rotary Way	2	2	23,755	35	0	2.0%	1.0%	64.4	-	87	276	873
7	Admiral Callaghan Lane	Rotary Way to I-80 Ramps	4	15	28,945	35	0	2.0%	1.0%	65.4	-	110	347	1,098
8	Plaza Drive	Admiral Callaghan Lane to Gateway Plaza	4	15	9,790	35	0	2.0%	1.0%	60.7	-	-	117	371
9	Plaza Drive	Gateway Plaza to Costco Driveway	4	15	7,472	35	0	2.0%	1.0%	59.5	-	-	90	283
10	Plaza Drive	Costco Driveway to Turner Parkway	4	15	9,360	35	0	2.0%	1.0%	60.5	-	-	112	355
11	Turner Parkway	Admiral Callaghan Lane to Plaza Drive	4	11	7,360	40	0	2.0%	1.0%	60.7	-	-	118	373
12	Redwood Parkway	West of Admiral Callaghan Lane	5	11	17,240	35	0	2.0%	1.0%	63.2	-	66	209	662
13	Redwood Parkway	East of Admiral Callaghan Lane	4	11	14,120	35	0	2.0%	1.0%	62.3	-	53	168	533

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Fairview at Northgate
Project Number: 097089103
Scenario: Opening Year
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

										Vehicle Mix		Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Admiral Callaghan Lane	Columbus Pkwy to Auto Club Dr	6	5	21,550	35	0	2.0%	1.0%	64.2	-	84	264	836
2	Admiral Callaghan Lane	Auto Club Dr to Plaza Dr	4	8	18,550	35	0	2.0%	1.0%	63.4	-	70	220	697
3	Admiral Callaghan Lane	Plaza Dr to Vallejo Corners	4	12	9,915	35	0	2.0%	1.0%	60.7	-	-	118	374
4	Admiral Callaghan Lane	Vallejo Corners to Target Driveway	4	12	12,080	35	0	2.0%	1.0%	61.6	-	-	144	456
5	Admiral Callaghan Lane	Target Driveway to Turner Parkway	4	12	12,230	35	0	2.0%	1.0%	61.6	-	-	146	462
6	Admiral Callaghan Lane	Turner Parkway to Rotary Way	2	2	17,810	35	0	2.0%	1.0%	63.2	-	65	207	655
7	Admiral Callaghan Lane	Rotary Way to I-80 Ramps	4	15	19,735	35	0	2.0%	1.0%	63.7	-	75	237	748
8	Plaza Drive	Admiral Callaghan Lane to Gateway Plaza	4	15	10,700	35	0	2.0%	1.0%	61.1	-	-	128	406
9	Plaza Drive	Gateway Plaza to Costco Driveway	4	15	7,600	35	0	2.0%	1.0%	59.6	-	-	91	288
10	Plaza Drive	Costco Driveway to Turner Parkway	4	15	10,900	35	0	2.0%	1.0%	61.2	-	-	131	413
11	Turner Parkway	Admiral Callaghan Lane to Plaza Drive	4	11	7,980	40	0	2.0%	1.0%	61.1	-	-	128	404
12	Redwood Parkway	West of Admiral Callaghan Lane	5	11	17,280	35	0	2.0%	1.0%	63.2	-	66	210	663
13	Redwood Parkway	East of Admiral Callaghan Lane	4	11	13,770	35	0	2.0%	1.0%	62.2	-	52	164	519

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Fairview at Northgate
Project Number: 097089103
Scenario: Opening Year Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

										Vehicle Mix		Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Admiral Callaghan Lane	Columbus Pkwy to Auto Club Dr	6	5	21,092	35	0	2.0%	1.0%	64.1	-	82	259	818
2	Admiral Callaghan Lane	Auto Club Dr to Plaza Dr	4	8	18,097	35	0	2.0%	1.0%	63.3	-	68	215	680
3	Admiral Callaghan Lane	Plaza Dr to Vallejo Corners	4	12	13,605	35	0	2.0%	1.0%	62.1	-	51	162	514
4	Admiral Callaghan Lane	Vallejo Corners to Target Driveway	4	12	15,770	35	0	2.0%	1.0%	62.7	-	60	188	596
5	Admiral Callaghan Lane	Target Driveway to Turner Parkway	4	12	15,920	35	0	2.0%	1.0%	62.8	-	60	190	601
6	Admiral Callaghan Lane	Turner Parkway to Rotary Way	2	2	24,885	35	0	2.0%	1.0%	64.6	-	91	289	915
7	Admiral Callaghan Lane	Rotary Way to I-80 Ramps	4	15	30,505	35	0	2.0%	1.0%	65.6	-	116	366	1,157
8	Plaza Drive	Admiral Callaghan Lane to Gateway Plaza	4	15	10,375	35	0	2.0%	1.0%	60.9	-	-	124	393
9	Plaza Drive	Gateway Plaza to Costco Driveway	4	15	8,002	35	0	2.0%	1.0%	59.8	-	-	96	303
10	Plaza Drive	Costco Driveway to Turner Parkway	4	15	10,350	35	0	2.0%	1.0%	60.9	-	-	124	392
11	Turner Parkway	Admiral Callaghan Lane to Plaza Drive	4	11	7,840	40	0	2.0%	1.0%	61.0	-	-	126	397
12	Redwood Parkway	West of Admiral Callaghan Lane	5	11	18,380	35	0	2.0%	1.0%	63.5	-	71	223	705
13	Redwood Parkway	East of Admiral Callaghan Lane	4	11	14,870	35	0	2.0%	1.0%	62.5	-	56	177	561

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Fairview at Northgate
Project Number: 097089103
Scenario: Horizon Year
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

								Vehicle Mix		Distance from Centerline of Roadway			
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Admiral Callaghan Lane	Columbus Pkwy to Auto Club Dr	6	5	25,400	35	0	2.0%	1.0%	64.9	-	98	311	985
2	Admiral Callaghan Lane	Auto Club Dr to Plaza Dr	4	8	22,000	35	0	2.0%	1.0%	64.2	-	83	261	827
3	Admiral Callaghan Lane	Plaza Dr to Vallejo Corners	4	12	11,550	35	0	2.0%	1.0%	61.4	-	-	138	436
4	Admiral Callaghan Lane	Vallejo Corners to Target Driveway	4	12	14,000	35	0	2.0%	1.0%	62.2	-	53	167	529
5	Admiral Callaghan Lane	Target Driveway to Turner Parkway	4	12	14,200	35	0	2.0%	1.0%	62.3	-	54	170	536
6	Admiral Callaghan Lane	Turner Parkway to Rotary Way	2	2	20,500	35	0	2.0%	1.0%	63.8	-	75	238	753
7	Admiral Callaghan Lane	Rotary Way to I-80 Ramps	4	15	22,400	35	0	2.0%	1.0%	64.3	-	85	269	849
8	Plaza Drive	Admiral Callaghan Lane to Gateway Plaza	4	15	12,400	35	0	2.0%	1.0%	61.7	-	-	149	470
9	Plaza Drive	Gateway Plaza to Costco Driveway	4	15	8,700	35	0	2.0%	1.0%	60.2	-	-	104	330
10	Plaza Drive	Costco Driveway to Turner Parkway	4	15	12,600	35	0	2.0%	1.0%	61.8	-	-	151	478
11	Turner Parkway	Admiral Callaghan Lane to Plaza Drive	4	11	9,300	40	0	2.0%	1.0%	61.7	-	-	149	471
12	Redwood Parkway	West of Admiral Callaghan Lane	5	11	20,000	35	0	2.0%	1.0%	63.9	-	77	243	767
13	Redwood Parkway	East of Admiral Callaghan Lane	4	11	16,000	35	0	2.0%	1.0%	62.8	-	60	191	604

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels

Project Name: Fairview at Northgate
Project Number: 097089103
Scenario: Horizon Year Plus Project
Ldn/CNEL: CNEL

Assumed 24-Hour Traffic Distribution:	Day	Evening	Night
Total ADT Volumes	77.70%	12.70%	9.60%
Medium-Duty Trucks	87.43%	5.05%	7.52%
Heavy-Duty Trucks	89.10%	2.84%	8.06%

										Vehicle Mix		Distance from Centerline of Roadway		
				Median	ADT	Speed	Alpha	Medium	Heavy	CNEL at	Distance to Contour			
#	Roadway	Segment	Lanes	Width	Volume	(mph)	Factor	Trucks	Trucks	100 Feet	70 CNEL	65 CNEL	60 CNEL	55 CNEL
1	Admiral Callaghan Lane	Columbus Pkwy to Auto Club Dr	6	5	27,102	35	0	2.0%	1.0%	65.2	-	105	332	1,051
2	Admiral Callaghan Lane	Auto Club Dr to Plaza Dr	4	8	23,702	35	0	2.0%	1.0%	64.5	-	89	282	891
3	Admiral Callaghan Lane	Plaza Dr to Vallejo Corners	4	12	15,240	35	0	2.0%	1.0%	62.6	-	58	182	576
4	Admiral Callaghan Lane	Vallejo Corners to Target Driveway	4	12	17,690	35	0	2.0%	1.0%	63.2	-	67	211	668
5	Admiral Callaghan Lane	Target Driveway to Turner Parkway	4	12	17,890	35	0	2.0%	1.0%	63.3	-	68	214	676
6	Admiral Callaghan Lane	Turner Parkway to Rotary Way	2	2	28,935	35	0	2.0%	1.0%	65.3	34	106	336	1,064
7	Admiral Callaghan Lane	Rotary Way to I-80 Ramps	4	15	34,530	35	0	2.0%	1.0%	66.2	-	131	414	1,309
8	Plaza Drive	Admiral Callaghan Lane to Gateway Plaza	4	15	13,670	35	0	2.0%	1.0%	62.1	-	52	164	518
9	Plaza Drive	Gateway Plaza to Costco Driveway	4	15	10,512	35	0	2.0%	1.0%	61.0	-	-	126	399
10	Plaza Drive	Costco Driveway to Turner Parkway	4	15	14,490	35	0	2.0%	1.0%	62.4	-	55	174	549
11	Turner Parkway	Admiral Callaghan Lane to Plaza Drive	4	11	10,520	40	0	2.0%	1.0%	62.3	-	53	168	533
12	Redwood Parkway	West of Admiral Callaghan Lane	5	11	21,470	35	0	2.0%	1.0%	64.2	-	82	261	824
13	Redwood Parkway	East of Admiral Callaghan Lane	4	11	17,470	35	0	2.0%	1.0%	63.2	-	66	208	659

[1] Distance is from the centerline of the roadway segment to the receptor location.
"-" = contour is located within the roadway right-of-way.

Appendix J

Transportation Impact Analysis



Prepared by

FEHR PEERS

100 Pringle Avenue
Suite 600
Walnut Creek, CA 94596

December 2019

Transportation Impact Analysis

Fairview at Northgate

Prepared for:
Kimley-Horn and Associates, Inc.

Fairview at Northgate TIA

Prepared for:
Kimley-Horn and Associates

December 2019

WC17-3448.01

FEHR PEERS

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EXECUTIVE SUMMARY

Overview

This report presents the analysis and findings of the Fairview at Northgate Transportation Impact Analysis. The study purpose is to provide impact analysis for the development of 156,000 square foot Costco with a gas station and 30,000 square feet of additional retail space, and 178 single-family homes.

Methodology

Study Intersections

The study analyzes 25 intersections, including five new intersections formed by the project driveways, and two future intersections to be constructed as part of the planned I-80/Redwood Parkway interchange improvements, shown on **Figure 1** in Chapter 1 of this report. The intersection analysis encompasses several roadway segments, including Redwood Parkway between Fairgrounds Drive and Ascot Parkway; Admiral Callaghan Lane between Redwood Parkway and Columbus Parkway; Turner Parkway between Admiral Callaghan Lane and Plaza Drive; and Plaza Drive between Turner Parkway and Admiral Callaghan Lane. Weekday AM, mid-day, PM, and Saturday mid-day peak period traffic counts were obtained in November 2017 and August 2019, when local schools were in session[1]. Based on these counts, the study area peak hours are typically about 8:00 – 9:00 AM for the weekday AM peak hour; 1:00 – 2:00 PM for the weekday mid-day peak hour; 4:30 – 5:30 PM for the weekday PM peak hour; and 12:30 – 1:30 PM for the Saturday peak hour.

Freeway Operations

This study analyzes six freeway segments. Average daily traffic and peak hour traffic volumes were obtained in September 2018 from the California Department of Transportation Performance Measurement System data. Based on these traffic volumes, the study area peak hour for the freeway system is typically about 4:00 PM – 5:00 PM.

[1] The 2019 counts were obtained to support the addition of intersections 15 – 18 to the analysis, as well as to support the addition of an AM peak hour analysis to the study. Based on a comparison of the 2017 and 2019 counts at adjacent intersections and one "check" intersection included in both counts, the 2019 volumes were very slightly lower than the 2017 counts, so the 2017 counts were determined to continue to be adequate for purposes of representing existing conditions.

Analysis Scenarios

The study assesses peak hour intersection level of service (LOS) for Existing (November 2017/August 2019), Existing Plus Project, Near-Term (2023) Without Project, Near-Term With Project, Cumulative (2040) Without Project, and Cumulative With Project conditions. The Transportation Research Board's 2010 Highway Capacity Manual methodology for intersection level of service analysis was used.

The study assessed peak hour freeway operations for Existing (November 2017), Existing Plus Project, Near-Term (2023) Without Project, Near-Term With Project, Cumulative (2040) Without Project, and Cumulative With Project conditions. Highway Capacity Software 2010 (HCS 2010) was used to assess freeway conditions.

Project Trip Generation and Assignment

Costco trip generation rates were developed based on driveway counts conducted in November 2017 and July 2019 at the existing Costco store on Plaza Drive in Vallejo. Trip generation rates from the Institute of Transportation Engineers *Trip Generation, 9th Edition* for Big Box Retail stores were compared with the rates derived from the existing Costco driveways, and the higher count-based rates were used.

Institute of Transportation Engineers *Trip Generation, 9th Edition* trip generation rates were used to estimate trips generated by the non-Costco portion of the retail development and the single-family homes.

The assignment of the new trips to the roadway network was based on the Napa/Sonoma Travel Demand Model and the location of surrounding land uses. The assignment was performed using Vistro trip assignment software.

Approved and Anticipated Near-Term Development– Trip Generation and Assignment

Published forecasts from the February 2016 In-N-Out study, the Vallejo General Plan EIR, and the March 2015 Chick-Fil-A study were used to develop and validate appropriate background traffic growth rates. The near-term forecasts also include the In-N-Out trip assignment, due to the proximity of that project to the proposed project site. The In-N-Out trips were assigned to the roadway network using the Vistro software using distribution patterns derived from the February 2016 In-N-Out study.

Findings

Intersection Operations

The Project intersection impacts are presented in Impact TRA-1 (Existing With Project impacts) in Section 4, Impact TRA-2 (Near-Term With Project impacts) in Section 5, and Impact TRA-3 (Cumulative With Project impacts) in Section 6. The Project is projected to significantly impact seven intersections under Existing With Project conditions, four intersections under Near-Term Project conditions, and eight intersections under Cumulative With Project conditions. Intersection mitigation measures are presented in Sections 4, 5, and 6.

The intersections significantly impacted under Existing With Project conditions are:

- Intersection #7: Admiral Callaghan Lane/Rotary Way
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S)
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway

The intersections significantly impacted under Near-Term With Project conditions are:

- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S)
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway

The intersections significantly impacted under Cumulative With Project conditions are:

- Intersection # 6: Admiral Callaghan Lane/Turner Parkway
- Intersection #7: Admiral Callaghan Lane/Rotary Way
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps

- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S)
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway
- Intersection #25: Redwood Parkway/I-80 NB Ramps

Mitigation measures are proposed to mitigate the significant intersection impacts; however, the mitigations do not reduce these impacts to a less than significant level, and no additional feasible mitigation measures have been identified that would reduce the significant impacts to less than significant. As such, the impacts would remain significant and unavoidable with mitigation.

The impacts above are based on intersection delays and level of service results. The report also identifies vehicle queues which are projected to exceed available storage at the study intersections. Many of the queue exceedances occur at intersections that are significantly impacted based on delay and LOS. The instance of a queue exceeding available storage is not in itself a significant impact based on the significance criteria, but rather a condition reflecting the service to individual movements at an intersection.

Freeway Operations

The Project intersection impacts are presented in Impact TRA-3 (Cumulative With Project impacts) in Section 6. The Project is projected to impact one freeway segment under Cumulative With Project conditions.

The freeway segment significantly impacted under Cumulative With Project conditions is:

- Segment #6: I-80 Eastbound – West of Redwood

Other Impact Findings

An assessment of impacts relative to the CEQA Guidelines Appendix G criteria addressing pedestrian and bicycle facilities, public transit, emergency access, hazards, and air traffic is provided; the following impacts were identified:

- The Project may generate bus transit demand that would not be adequately served by the current bus stops in the area. SolTrans (the bus transit agency that serves Vallejo) has requested a new bus stop with a pull-out on Turner Parkway east of Admiral Callaghan Lane in response to the proposed Project, and the stop should be designed with a shelter and lighting and other amenities as determined by SolTrans and the City of Vallejo.

CHAPTER 1 – INTRODUCTION

A Transportation Impact Assessment (TIA) was conducted for the proposed Fairview at Northgate development (Project) in the city of Vallejo, California.

The proposed project is a mixed-use development located east of Admiral Callaghan Lane and south of Turner Parkway on a currently undeveloped site. The site plan is presented in **Figure 2.** The development would include approximately 186,000 square feet of retail space, including a 156,000 square foot Costco with a gas station, 30,000 square feet in smaller retail shops, and 178 single-family homes.

This study addresses the Project's traffic impacts on the roadway system under Existing, Near-Term, and Cumulative scenarios and discusses the potential impacts to the adjacent bicycle, pedestrian, and transit network.

Report Organization

This report is organized into seven chapters as described below:

- ***Chapter 1 – Introduction*** describes the study area, the analysis scenarios, the analysis methodology, and significance criteria.
- ***Chapter 2 – Existing Conditions*** describes the transportation system within the study area, including the surrounding roadway network, existing bicycle, pedestrian, and transit facilities, and intersection operations.
- ***Chapter 3 – Project Characteristics*** describes the Project's trip generation, distribution, and assignment.
- ***Chapter 4 -Existing with Project Traffic Conditions*** discusses traffic impacts associated with the addition of Project-generated traffic to existing traffic.
- ***Chapter 5 – Near-Term Traffic Conditions*** discusses traffic impacts associated with the addition of Project-generated traffic to traffic volumes anticipated in 2023.
- ***Chapter 6 – Cumulative Traffic Conditions*** discusses traffic impacts associated with the addition of Project-generated traffic to traffic volumes anticipated in 2040.
- ***Chapter 7 – Transit, Pedestrian and Bicyclist Impact Assessment*** describes the Project's impacts on the transit, pedestrian and bicycle networks.

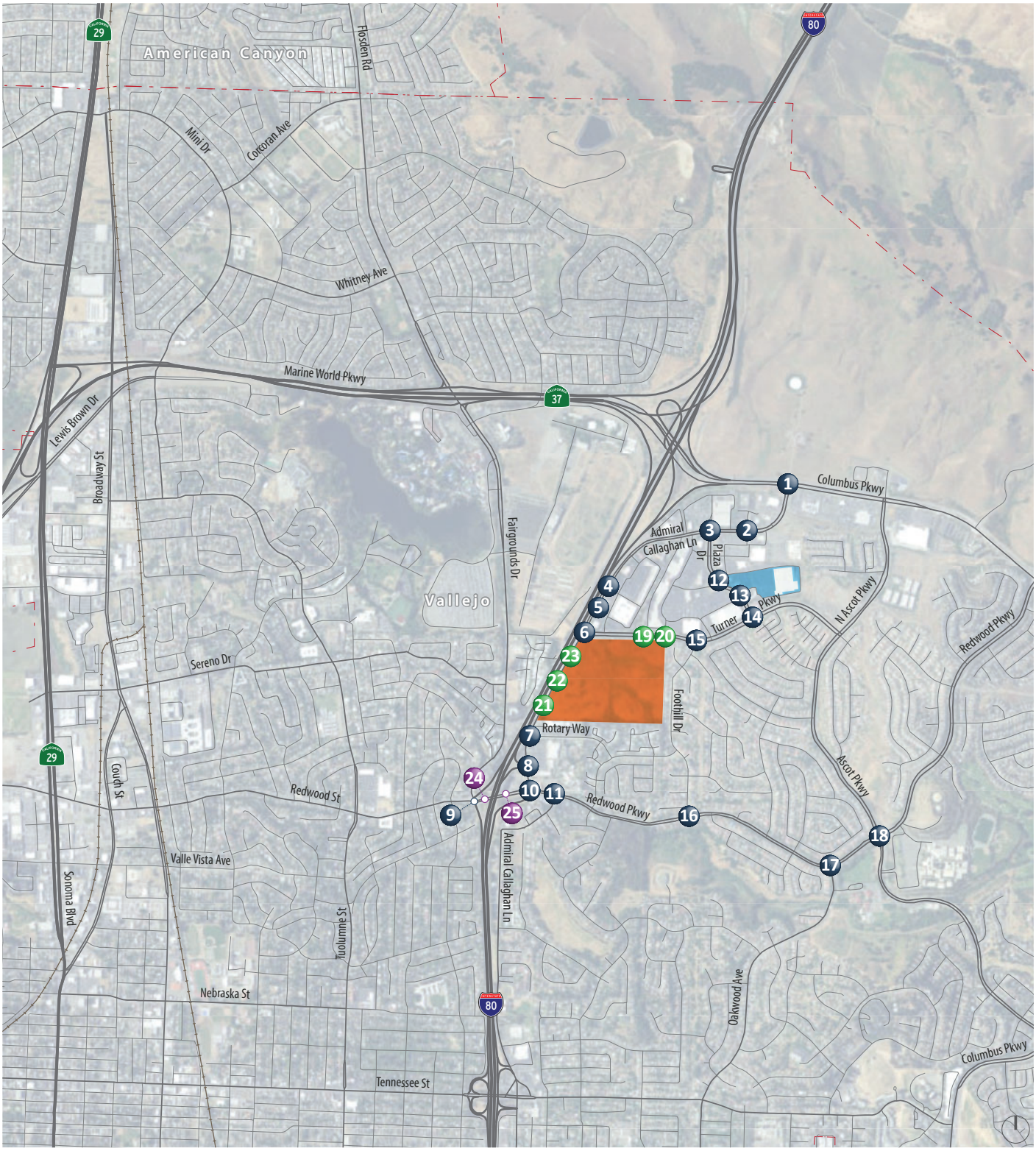


Figure 1

Project Site Vicinity

WC17-3448_1_SiteVic



Site Plan Source: Fairview at Northgate Plan Set, Revised May 2019

Figure 2

Project Site Plan

Study Area

The study intersections, and freeway segments were selected in consultation with City of Vallejo staff based on a review of the project location and the amount of traffic that could be added to the intersections in the site vicinity.

Study Intersections

The intersection analysis encompasses several roadway segments, including Redwood Parkway between Fairgrounds Drive and Ascot Parkway; Admiral Callaghan Lane between Redwood Parkway and Columbus Parkway; Turner Parkway between Admiral Callaghan Lane and Plaza Drive; and Plaza Drive between Turner Parkway and Admiral Callaghan Lane. The impact analysis is based on corridor simulation for Redwood Parkway between Fairgrounds Drive and Admiral Callaghan Lane, and for Admiral Callaghan Lane between Redwood Parkway and the Vallejo Corners Driveway, and on isolated intersection analysis for the remaining intersections. The study intersections identified for analysis include:

1. Admiral Callaghan Lane/Columbus Parkway
2. Admiral Callaghan Lane/Auto Club Drive
3. Admiral Callaghan Lane/Plaza Drive
4. Admiral Callaghan Lane/Vallejo Corners
5. Admiral Callaghan Lane/Target Driveway
6. Admiral Callaghan Lane/Turner Parkway
7. Admiral Callaghan Lane/Rotary Way
8. Admiral Callaghan Lane/I-80 EB Ramps
9. Redwood Street/Fairgrounds Drive/I-80 WB Ramps
10. Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp
11. Redwood Parkway/Admiral Callaghan Lane (S)
12. Plaza Drive/Gateway Plaza
13. Plaza Drive/Costco Driveway
14. Plaza Drive/Turner Parkway
15. Turner Parkway/Foothill Drive
16. Redwood Parkway/Foothill Drive
17. Redwood Parkway/Oakwood Drive
18. Redwood Parkway/Ascot Parkway
19. Turner Parkway/Western Residential Project Driveway (With Project cases only)
20. Turner Parkway/Eastern Residential Project Driveway (With Project cases only)
21. Admiral Callaghan Lane/Southern Project Driveway (With Project cases only)
22. Admiral Callaghan Lane/Middle Project Driveway (With Project cases only)

23. Admiral Callaghan Lane/Northern Project Driveway (With Project cases only)
24. Redwood Parkway/I-80 Westbound Ramps (Future intersection: Cumulative (2040) cases only)
25. Redwood Parkway/I-80 Eastbound Ramps (Future intersection: Cumulative (2040) cases only)

Freeway Facilities

The freeway facilities identified for analysis include:

1. I-80 Westbound East of Columbus Parkway
2. I-80 Westbound between Columbus Parkway and Redwood Parkway
3. I-80 Westbound West of Redwood Parkway
4. I-80 Eastbound East of Columbus Parkway
5. I-80 Eastbound between Columbus Parkway and Redwood Parkway
6. I-80 Eastbound West of Redwood Parkway

Analysis Scenarios

The traffic impacts are analyzed for the following scenarios:

- Existing Conditions;
- Existing with Project Conditions;
- Near-Term (2023 plus Other Approved Projects) without Project Conditions;
- Near-Term (2023 plus Other Approved Projects) with Project Conditions;
- Cumulative (2040) without Project Conditions; and
- Cumulative (2040) with Project Conditions

While traffic studies typically analyze the weekday morning and evening peak hour conditions, this analysis also includes the weekday mid-day peak hour (1:00 – 2:00 PM) and Saturday mid-day peak hour (12:30 – 1:30 PM).

Analysis Methodology

This section describes the intersection operations, roadway, and freeway analysis methodologies utilized in this traffic study.

Intersection Operations

The traffic operations analysis uses the Synchro and Synchro/SimTraffic 9.0 software, based on the procedures outlined in the Transportation Research Board's *2010 Highway Capacity Manual* (2010 HCM). Intersection operation inputs include vehicle and pedestrian volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. For intersections not located on Admiral Callaghan Lane between Vallejo Corners and Redwood Parkway and on Redwood Parkway between Fairgrounds Drive and Admiral Callaghan Lane (intersections #1 - #3 and #12 - #20), isolated intersection analysis using the Synchro software was used. For the remaining intersections (#4 - #11 and #21 - #25), the SimTraffic software was used to analyze the Admiral Callaghan/Redwood Parkway/Turner Parkway network as a system. The average of ten SimTraffic model runs determines the intersection operations for these intersections.

Intersection operations are described using the term "Level of Service" (LOS), a quantitative measure of the average delay experienced by a driver at the intersection. LOS ranges from LOS A, with no congestion and little delay, to LOS F, with excessive congestion and delay. **Table 1** provides ranges of delay and volume-to-capacity ratios that correspond to vehicular LOS at intersections.

Table 1: Level of Service Definitions – Intersections

Level of Service	Signalized Intersections		Unsignalized Intersections	
	Delay (seconds/vehicle)	Volume-to-Capacity Ratio (V/C)	Delay (seconds/vehicle)	Volume-to-Capacity Ratio (V/C)
A	< 10.0	< 1.0	< 10.0	< 1.0
B	> 10.0 to 20.0	< 1.0	> 10.0 to 15.0	< 1.0
C	> 20.0 to 35.0	< 1.0	> 15.0 to 25.0	< 1.0
D	> 35.0 to 55.0	< 1.0	> 25.0 to 35.0	< 1.0
E	> 55.0 to 80.0	< 1.0	> 35.0 to 50.0	< 1.0
F	> 80.0	> 1.0	> 50.0	> 1.0

Source: 2010 *Highway Capacity Manual.*

Queues

Vehicle queues were estimated at the intersections evaluated with SimTraffic along Redwood Parkway and Admiral Callaghan Lane. The 50th percentile and 95th percentile queues are reported. The 50th percentile queue reflects the typical vehicle queues, while the 95th percentile queue reflects the typical maximum

extent of vehicle queues during the hour, occurring 2 to 3 times during the hour. Maximum queues may be longer but occur infrequently.

Traffic Signal Warrants

Unsignalized study intersections operating below acceptable standards during peak hours (LOS F; see significance criteria for details) were studied to determine whether installation of a traffic control signal is justified. Unsignalized study intersections were evaluated under the Peak Hour Signal Warrant 3 criteria outlined in the 2014 *California Manual on Uniform Traffic Control Devices*.

Freeway Facilities

Freeway facilities (basic, weaving, and merge/diverge segments) were evaluated using the Highway Capacity Software 2010 (HCS 2010). The HCS 2010 implements the procedures defined in the 2010 HCM and takes into consideration peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles, and number of travel lanes. These factors are used to determine the vehicle density, measured in passenger cars per mile per lane. **Table 2** provides the relationship between vehicle density and LOS for freeway facilities.

Table 2: Level of Service Definitions – Freeway Facilities

Level of Service	Density (passenger cars per mile per lane)		
	Basic Segment	Weaving Segment	Merge/Diverge Segment
A	≤ 11	≤ 10	≤ 10
B	> 11 to 18	> 10 to 20	> 10 to 20
C	> 18 to 26	> 20 to 28	> 20 to 28
D	> 26 to 35	> 28 to 35	> 28 to 35
E	> 35 to 45	> 35	> 35
F	> 45	Demand Exceeds Capacity	Demand Exceeds Capacity

Source: 2010 *Highway Capacity Manual.*

Significance Criteria

This section describes the thresholds of significances used to determine Project-related traffic impacts. Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) provides the guidance for determining the significance of potential transportation and traffic impacts. These guidelines are presented below, along with the specific criteria used in this EIR based on the standards of the City of Vallejo and Caltrans (for Caltrans freeway facilities). Impacts to transportation and traffic would be significant if the proposed project would:

A. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

   For the purposes of this impact evaluation, consistent with Policy MTC 2.5 and Action MTC 2.5B in the Vallejo General Plan 2040 which sets "LOS E or better as an advisory standard to be considered along with, but not to override, metrics for pedestrian, bicycle, transit and emergency access performance", an impact would be significant if:

   1. The Project causes the v/c ratio, as calculated with the HCM methodology, to increase by 0.01 or more at a signalized intersection operating at LOS F without the Project; or
   2. The project causes a stop-controlled intersection to fall to LOS F (for side-street stop-controlled intersections, for the worst side street movement or approach),or adds traffic to a stop-controlled intersection already operating at LOS F (for side-street stop-controlled intersections, for the worst side street movement or approach), and the California Manual on Uniform Traffic Control Devices peak hour signal warrant is met.
   3. The project causes a freeway segment to deteriorate from LOS E or better to LOS F.
   4. The project adds more than 50 peak hour vehicles to a freeway segment already operating at LOS F without the project.

B. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

   For the purposes of this impact evaluation, an impact would be significant if the project site access design does not provide adequate sight distance and does not conform to City street design standards.

C. Result in inadequate emergency access.

   For the purposes of this impact evaluation, an impact would be significant if the Project design impedes emergency access to the site.

D. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

   For the purposes of this impact evaluation, an impact would be significant it the Project prevents planned transit, pedestrian, or bicycle improvements from being constructed.

CHAPTER 2 – EXISTING CONDITIONS

This chapter describes the existing transportation conditions in the study area including the roadway network and transit, pedestrian, and bicycle facilities in the vicinity of the project site.

Roadway System

Interstate 80 (I-80) is an east-west freeway that extends from Chicago to San Francisco. Within the City of Vallejo, I-80 is six lanes wide and is oriented in the north-south direction; traveling north on I-80 within the City of Vallejo corresponds to traveling east. I-80 provides access to the project site from the north via Columbus Parkway and Admiral Callaghan Lane, and from the south via Redwood Parkway and Admiral Callaghan Lane.

Columbus Parkway is an east-west four-lane arterial that begins at the terminus of State Route 37. Columbus Parkway provides access to the project site via Admiral Callaghan Lane. The posted speed limit is 45 miles per hour and on-street parking is prohibited within the project vicinity.

Redwood Parkway is an east-west four-lane arterial between I-80 and Columbus Parkway. Redwood Parkway provides access to the project site via Admiral Callaghan Lane. The posted speed limit is 35 miles per hour and on-street parking is prohibited in the project vicinity.

Admiral Callaghan Lane is a north-south four-lane arterial between Columbus Parkway and Turner Parkway and continues as a two-lane arterial between Turner Parkway and Rotary Way, along the Project frontage. South of Rotary Way, Admiral Callaghan Lane widens back out to a four-lane arterial before continuing as a residential street south of Redwood Parkway, off-set to the east. Admiral Callaghan Lane provides primary access to the commercial portion of the project site, between Turner Parkway and Rotary Way. The posted speed limit is 35 miles per hour and on-street parking is prohibited in the project vicinity.

Turner Parkway is an east-west four-lane arterial that extends from Ascot Parkway to Admiral Callaghan Lane. Turner Parkway provides primary access to the residential portion of the project site. The posted speed limit is 40 miles per hour and on-street parking is prohibited.

Plaza Drive is a north-south four-lane roadway that extends from Admiral Callaghan Lane to Turner Parkway. Plaza Drive provides primary access to the existing Costco site. Although there is no posted speed limit, vehicles generally travel at approximately 30 miles per hour. On-street parking is prohibited on Plaza Drive.

Bicycle Facilities

Bicycle facilities are typically classified into four categories as described below:

- **Bicycle paths (Class I)** provide a completely separate right-of-way and are designated for the exclusive use bicycles and pedestrians with vehicle cross-flow minimized.
- **Bicycle lanes (Class II)** provide a restricted right-of-way and are designated for the use of bicycles for one-way travel with a striped lane on a street or highway. Bicycle lanes are generally a minimum of five feet wide. Vehicle parking and vehicle/pedestrian cross-flow are permitted.
- **Bicycle routes (Class III)** provide right-of-way designated by signs or pavement markings for shared use with motor vehicles. These include sharrows or "shared-lane markings" to highlight the presence of bicyclists.
- **Class IV Bikeways (Class IV)** cycle tracks or "separated" bikeways provide a right-of-way designated exclusively for bicycle travel within a roadway and are protected from other vehicle traffic by physical barriers, including, but not limited to, grade separation, flexible posts, inflexible vertical barriers such as raised curbs, or parked cars.

Within the study area, Class II bicycle lanes are provided on Redwood Parkway east of Admiral Callaghan Lane and on Turner Parkway between Admiral Callaghan Lane and Ascot Parkway. Class III sharrows are provided on Admiral Callaghan Lane north of Turner Parkway. The Vallejo General Plan 2040 identifies the section of Admiral Callaghan Lane between Turner Parkway and Redwood Parkway as a future Class II bike lane facility.

Pedestrian Facilities

Pedestrian facilities include sidewalks, pathways, crosswalks, and pedestrian signals. Sidewalks are provided along all arterials in the study area, including Turner Parkway, Admiral Callaghan Lane, Admiral Callaghan Lane South, Plaza Drive, Rotary Way, Redwood Parkway, Redwood Street and the south side of Columbus Parkway.

Transit Services

Transit service in the area is provided by the San Francisco Bay Ferry, SolTrans, BART and Amtrak.

The **San Francisco Bay Ferry / Vallejo SF Route** offers ferry service on four high-speed ADA accessible vessels daily between Vallejo and San Francisco. The Vallejo Ferry Terminal is located at Mare Island Way and Georgia Street approximately 4 miles from the Project site. The San Francisco Ferry Building Gate B, and

San Francisco's Pier 41 are located in the Pier 39/Fisherman's Wharf area. Travel time between Vallejo and San Francisco is approximately 60 minutes and approximately 10 minutes between Pier 41 and the SF Ferry Building. Parking is available adjacent to the Vallejo Ferry Terminal ($6.00 per day, $40.00 per month). Seasonal service is also available to Oracle Park for select Giants games.

SolTrans (Solano County Transit) provides local and express bus service to the Solano County cities of Vallejo, Benicia, and Fairfield. Express bus service connects to the Contra Costa County communities of El Cerrito, Pleasant Hill, and Walnut Creek, regional connections to BART. SolTrans runs Route 7 and Route 38 with stops along Redwood Parkway and Admiral Callaghan Lane, Route 20 with stops along Admiral Callaghan, and Route 2 with stops on Plaza Drive and Turner Parkway,

Route 2 runs from approximately 6:00 AM to 8:30 PM on weekdays and from approximately 6:30 AM to 7:00 PM on weekends. The route connects the Vallejo Transit Center, Sereno Transit Center, Solano Community College and Gateway Plaza. In the Project vicinity, stops are located on Plaza Drive, Turner Parkway, and at Admiral Callaghan Lane/Target Driveway.

Route 7 runs from approximately from 6:00 AM to 9:00 PM on weekdays and from approximately 6:30 AM to 8:00 PM on Saturdays, and from approximately 8:30 AM to 8:00 PM on Sundays. The route connects the Vallejo Transit Center with Gateway Place, and with businesses, neighborhoods, and schools along Florida Street and Springs Road. In the Project site vicinity, stops are located on Redwood Parkway, Admiral Callaghan Lane, Plaza Drive and at Admiral Callaghan Lane/Target Driveway.

Route 20 runs from approximately 8:30 AM to 7:00 PM on weekdays only. It connects the Sereno Transit Center with Sutter Solano Medical Center, Gateway Plaza, and downtown Benicia. In the Project vicinity, stops are located on Plaza Drive.

Route 38 is a school tripper route that runs on bus at 7 AM on weekdays only. The route connects multiple residential neighborhoods with Beverly Hills Elementary School, Jesse Bethel High School, and Gateway Plaza. In the Project site vicinity, stops are located on Redwood Parkway, Admiral Callaghan Lane, Plaza Drive and at Admiral Callaghan Lane/Target Driveway.

BART and Amtrak connections within Solano County include local routes 1 through 8, and 20. Solano Express routes include route Y, 80, and 85, and School Tripper routes include 15/17, and 38.

Traffic Counts

Counts of pedestrians, bicyclists, and vehicles at the study intersections were collected in early November 2017 and late August 2019 for weekday AM, mid-day, PM, and Saturday mid-day two-hour peak periods.

The technical appendix contains the counts and a summary of the dates for each count.[2] Local area schools were in session for these counts. Based on these counts, the study area peak hours are typically 8:00 - 9:00 AM for the weekday AM peak hour, 1:00 – 2:00 PM for the weekday mid-day peak hour, 4:30 – 5:30 PM for the weekday PM peak hour, and 12:30 – 1:30 PM for the Saturday mid-day peak hour.

In addition to the intersection counts, counts of the current Costco site (store plus gas station) were conducted in November 2017, and supplemental counts of the gas station only were taken in July 2019 to support the addition of the weekday AM peak hour analysis, as well as to isolate the gas station-only trip generation during the other analysis periods. While the July 2019 counts represent summer conditions, Costco representatives have stated that Costco gas station usage does not vary significantly by season.

The peak hour volumes are presented on **Figure 3** along with the existing lane configuration and traffic control. Traffic count worksheets are provided in **Appendix A**.

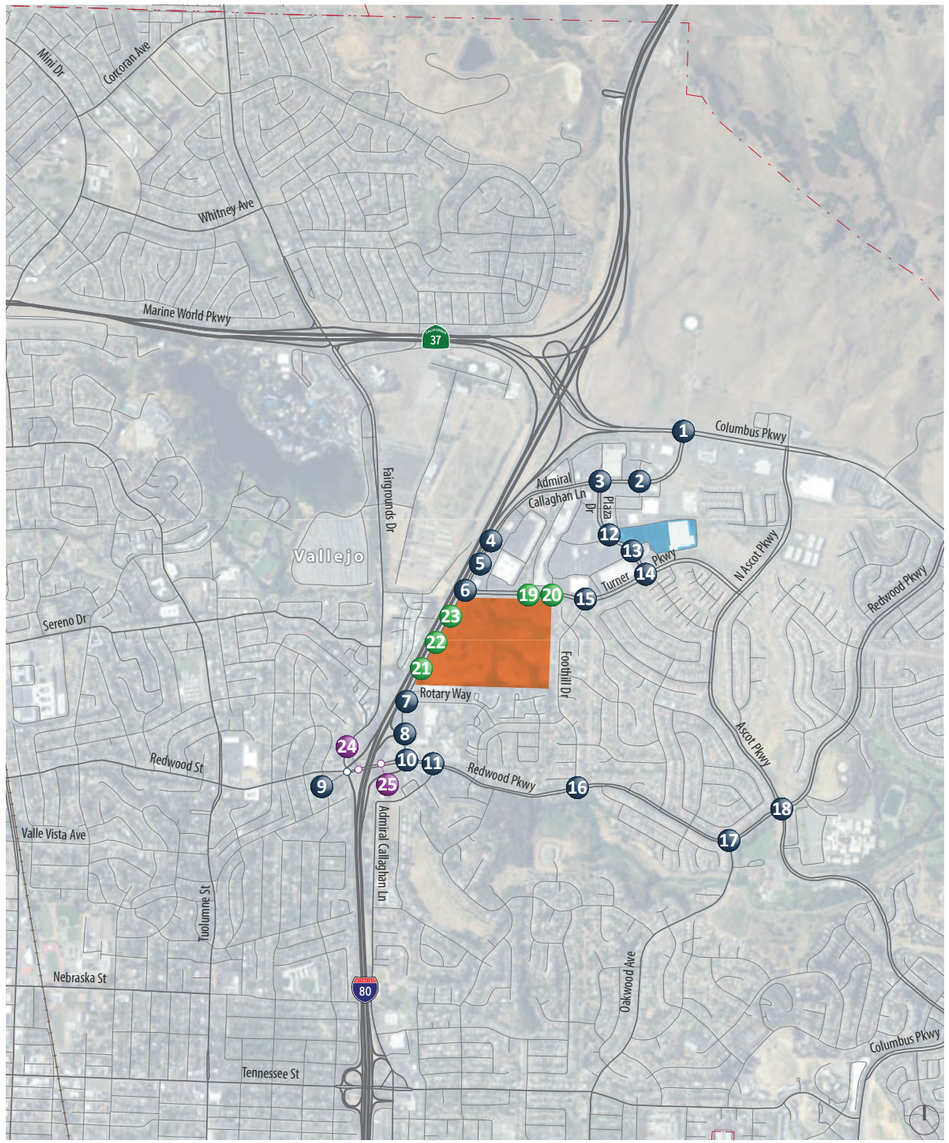
Intersection Analysis

Existing intersection lane configurations, signal timings, and peak hour turning movement volumes were used to calculate the levels of service for the study intersections during each peak hour, using the Synchro 9.0 software program for intersections 1, 2, 3, 12, 13 and 14, and the Synchro/SimTraffic software program for the remaining existing intersections in the study area, as presented in **Table 3.** Observed peak hour factors[3] were used at all intersections for the existing analysis. Pedestrian and bicycle activity were also factored into the analysis. Detailed intersection LOS calculation worksheets from Synchro are presented in **Appendix B,** and worksheets from SimTraffic are presented in **Appendix C**. As shown, signalized study intersections generally operate within the level of service standards set by the City of Vallejo, except for the following intersections:

- Redwood Street/Fairgrounds Drive/I-80 WB Ramps (AM peak hour)
- Plaza Drive/Costco Driveway (Mid-day, PM, and Saturday mid-day peak hours)

[2] The 2019 counts were obtained to support the addition of intersections 15 – 18 to the analysis, as well as to support the addition of an AM peak hour analysis to the study. Based on a comparison of the 2017 and 2019 counts at adjacent intersections and one "check" intersection included in both counts, the 2019 volumes were very slightly lower than the 2017 counts, so the 2017 counts were determined to continue to be adequate for purposes of representing existing conditions.

[3] The peak hour factor is the relationship between the peak 15-minute flow rate and the full hourly volume: PHF = Hourly volume / (4 x (volume during the peak 15 minutes of flow)). The analysis level of served is based on peak rates of flow occurring within the peak hour because substantial short term fluctuations typically occurring during an hour.



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

Project Access Intersection

Future Intersection

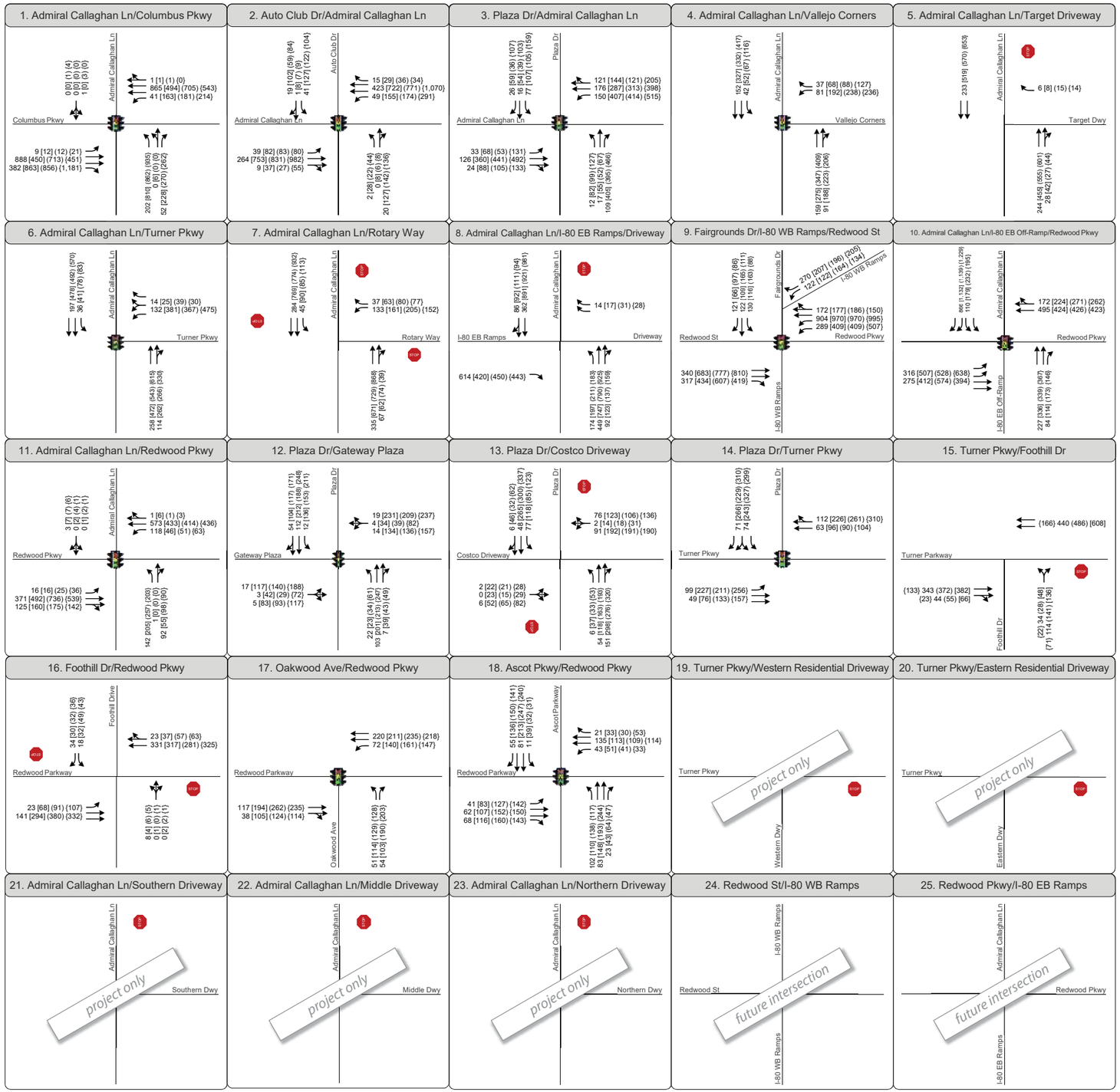


Figure 3

Existing No Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 3: Intersection Levels of Service — Existing Conditions

Location	Control[1, 2]	Peak Hour	Existing Conditions	
			Delay (seconds)[3]	LOS[3]
1. Admiral Callaghan Lane/Columbus Parkway	Signal	AM	13.8	B
		MD	17.2	B
		PM	24.0	C
		SA	20.4	C
2. Admiral Callaghan Lane/Auto Club Drive	Signal	AM	14.6	B
		MD	15.1	B
		PM	15.8	B
		SA	17.3	B
3. Admiral Callaghan Lane/Plaza Drive	Signal	AM	25.6	C
		MD	21.8	C
		PM	22.8	C
		SA	38.1	D
4. Admiral Callaghan Lane/Vallejo Corners	Signal	AM	4.7	A
		MD	7.4	A
		PM	8.9	A
		SA	11.8	B
5. Admiral Callaghan Lane/Target Driveway	SSS	AM	1.0 (2.4)	A (A)
		MD	1.7 (3.0)	A (A)
		PM	1.9 (5.4)	A (A)
		SA	2.1 (5.0)	A (A)
6. Admiral Callaghan Lane/Turner Parkway	Signal	AM	6.6	A
		MD	13.1	B
		PM	15.6	B
		SA	23.8	C
7. Admiral Callaghan Lane/Rotary Way[4]	AWS	AM	9.0	A
		MD	14.9	B
		PM	17.1	C
		SA	21.1	C
8. Admiral Callaghan Lane/I-80 EB Ramps	SSS	AM	2.1 (4.3)	A (A)
		MD	5.7 (11.7)	A (B)
		PM	5.7 (10.9)	A (B)
		SA	7.1 (13.2)	A (B)
9. Redwood Street/Fairgrounds Drive/I-80 WB Ramps	Signal	AM	**95.3**	**F**
		MD	31.7	C
		PM	36.2	D
		SA	38.8	D
10. Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp	Signal	AM	26.5	C
		MD	27.6	C
		PM	26.2	C
		SA	35.9	D

Table 3: Intersection Levels of Service — Existing Conditions

Location	Control[1, 2]	Peak Hour	Existing Conditions	
			Delay (seconds)[3]	LOS[3]
11. Redwood Parkway/Admiral Callaghan Lane (S)	Signal	AM	8.9	A
		MD	9.9	A
		PM	11.9	B
		SA	11.5	B
12. Plaza Drive/Gateway Plaza	Signal	AM	48.7	D
		MD	13.3	B
		PM	12.9	B
		SA	16.8	B
13. Plaza Drive/Costco Driveway	SSS	AM	5.3 (12.0)	A (B)
		MD	**27.0 (97.9)**	**F (F)**
		PM	**21.2 (79.5)**	**F (F)**
		SA	**90.6 (> 150.0)**	**F (F)**
14. Plaza Drive/Turner Parkway	Signal	AM	10.2	B
		MD	13.7	B
		PM	13.4	B
		SA	15.1	B
15. Turner Parkway/Foothill Drive	SSS	AM	2.2 (9.6)	A (A)
		MD	1.9 (12.5)	A (B)
		PM	2 (12.8)	A (B)
		SA	2.1 (14.2)	A (B)
16. Redwood Parkway/Foothill Drive	SSS	AM	1.5 (12.5)	A (B)
		MD	2 (15.3)	A (C)
		PM	2.4 (16.1)	A (C)
		SA	2.1 (18)	A (C)
17. Redwood Parkway/Oakwood Drive	Signal	AM	7.5	A
		MD	10.3	B
		PM	12.2	B
		SA	11.6	B
18. Redwood Parkway/Ascot Parkway	Signal	AM	15.6	B
		MD	15.8	B
		PM	16.6	B
		SA	16.2	B

Notes:
1. Signal = signalized intersection; AWS=all-way stop; SSS=side street stop
2. For side-street stop-controlled intersections, two service levels are listed: Average intersection LOS (LOS for worst side-street movement)
3. **Bold** indicates below-standard service level
4. Note that this intersection is analyzed in the Existing and Existing Plus Project scenarios as an all-way stop, which was the control type in 2017 when most of the traffic counts were taken. It has since been signalized in 2019.
Source: Fehr & Peers, December 2019.

Queues

The 50th and 95th percentile vehicle queues were estimated using SimTraffic 9.0 for all controlled movements at Intersections 4 through 11, as presented in **Appendix E**.

95th percentile vehicle queues are estimated to exceed the storage capacity at the intersections below. Note that 95th percentile queues are those that are projected to occur during only 5% or less of the entire peak hour.

- Intersection #6: Admiral Callaghan Lane/Turner Parkway: westbound left and northbound through/right during the Saturday mid-day peak hour.
- Intersection #7: Admiral Callaghan Lane/Rotary Way: westbound right during the weekday mid-day and Saturday mid-day peak hours, westbound left during the weekday PM peak hour, and northbound through/right during the Weekday AM and Saturday mid-day peak hours.
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps: northbound left during all peak hours, northbound through and through/right during the weekday AM and weekday PM peak hours.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps: south-westbound left during all peak hours, eastbound right and southbound left during the weekday AM and weekday PM peak hours, and westbound left during the weekday AM and Saturday mid-day peak hour, westbound through and through/right during the weekday AM peak hour.
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp: southbound right during the weekday AM, weekday PM and Saturday mid-day peak hours, eastbound left during the weekday AM and Saturday mid-day peak hours
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S): northbound left during all peak hours.

Signal Warrant Analysis

To assess the need for signalization of stop-controlled intersections, the California Manual of Uniform Traffic Control Devices (MUTCD) (Caltrans, 2014) presents ten signal warrants. The Peak Hour Volume Warrant (Warrant 3B) and the Peak Hour Delay Warrant (Warrant 3A) were used in this study as a supplemental

analysis tool to assess operations at the unsignalized intersections.[4] The unsignalized intersection of Intersection #13: Plaza Drive/Costco Driveway currently experiences high levels of delay for vehicles turning on to Plaza Drive. Intersection #13: Plaza Drive/Costco Driveway currently meets peak hour signal warrants during the Weekday Midday, Weekday PM, and Saturday Midday peak hours. The volumes are much lower in the Weekday AM peak hour and as a result the intersection does not meet peak hour signal warrants. In addition, the unsignalized intersection of Intersection #7: Admiral Callaghan Lane/Rotary Way meets the peak hour signal warrant during the Weekday Midday, Weekday PM, and Saturday Midday peak hours. This intersection is planned to be signalized. Intersection #8: Admiral Callaghan Lane/I-80 Northbound Ramps experiences higher demand in the northbound left movement in the AM peak hour, and as a result meets peak hour signal warrants in this peak hour only. The I-80 Northbound Ramps are planned to be relocated from Intersection #8 as part of the future reconfiguration of the interchange. The unsignalized intersection at Intersection #5: Admiral Callaghan Lane/Target Driveway does not currently meet peak hour signal warrants. **Appendix D** provides the existing conditions signal warrant worksheets.

[4] Unsignalized intersection warrant analysis is intended to examine the general correlation between existing conditions and the need to install new traffic signals. Existing peak-hour volumes are compared against a subset of the standard traffic signal warrants recommended in the MUTCD and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible State or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

Freeway Analysis

For freeway mainline segments, level of service (LOS) is a function of traffic density and describes the resulting delay experienced by people driving. LOS scores are compared to the minimum operating standards defined by Caltrans in **Table 4** below. All of the analysis segments operate at or above the minimum level of service standards for highway facilities set by Caltrans, LOS E or better.

Table 4: Weekday PM Freeway Analysis— Existing Conditions

Segment	Existing Conditions		
	Volume	Density[1]	LOS
1. West Bound – East of Columbus Parkway	3,520	16.4	B
2. Westbound – Redwood Parkway/Columbus Parkway	4,510	21.6	C
3. Westbound – West of Redwood Parkway	4,690	31.0	D
4. Eastbound – East of Columbus Parkway	4,890	29.9	D
5. Eastbound – Redwood Parkway/Columbus Parkway	2,980	18.9	C
6. Eastbound – West of Redwood	5,240	35.0	D

[1] Density Reported in Passenger Cars per Mile Per Lane

Source: Caltrans PeMS Database, September 2018; Fehr & Peers, December 2019.

CHAPTER 3 – PROJECT CHARACTERISTICS

This chapter provides an overview of the proposed project components and addresses the proposed project trip generation, distribution, and assignment characteristics, allowing for an evaluation of project impacts on the surrounding roadway network. The amount of traffic associated with the project was estimated using a three-step process:

1. **Trip Generation** – The *amount* of vehicle traffic entering/exiting the project site was estimated.
1. **Trip Distribution** – The *direction* trips would use to approach and depart the site was projected.
2. **Trip Assignment** – Trips were then *assigned* to specific roadway segments and intersection turning movements.

Project Description

The proposed Fairview at Northgate development (Project) would relocate the existing 125,437 square foot Costco in Vallejo, CA from its current location on Plaza Drive to the nearby vacant parcel located south of Turner Parkway and east of Admiral Callaghan Lane. The new Costco would be 152,138 square feet, with 27,490 square feet of additional retail space.[5] The new Costco gas station would have 30 fueling stations, as compared to 16 fueling stations at the existing store. The existing Costco building is assumed to be vacant in the Existing With Project scenario, and replaced with a new general retail tenant in the Near-Term (2023) With Project and Cumulative (2040) With Project scenarios. In addition to the relocated Costco and new retail space, the Project would also construct 178 single family homes on the east side of the site. A detailed site plan can be found in **Figure 2.**

The relocated Costco and new retail space would take access from three driveways on Admiral Callaghan Lane. The lane configuration and control assumptions for the three driveway intersections were developed iteratively and are ultimately designed to balance the needs of traffic entering and exiting the site as well as traffic flow along Admiral Callaghan Lane and Redwood Parkway. The selection of traffic control devices at the three intersections also considers the City's concerns regarding traffic signal spacing and the number of traffic signals along Admiral Callaghan Lane. The driveway configurations are as follows:

[5] Note that the trip generation estimates were prepared based on an assumption of 30,000 square feet of retail space, which results in slightly conservative estimates.

- Northern Driveway (Intersection #23): Unsignalized, separate outbound left turn and right turn lanes, southbound left turn pocket for inbound left turns
- Middle Driveway (Intersection #22): Signalized, two outbound left turn lanes and one outbound right turn lane, southbound left turn pocket for inbound left turns
- Southern Driveway (Intersection #21): Unsignalized, one outbound right turn lane, no outbound left turn allowed, southbound left turn pocket for inbound left turns

The residential portion of the Project would be served by two driveways on Turner Parkway. The western residential driveway (Intersection #19) was assumed to be signalized with full access for all movements. The eastern driveway (Intersection #20) was assumed to be unsignalized with right-in/right-out access only. As discussed in subsequent chapters, these driveways are not projected to meet the California Manual on Uniform Traffic Control Devices peak hour volume signal warrant, nor the pedestrian crossing volume warrant. The western driveway was assumed to be signalized to provide for protected left turn access to and from Turner Parkway for the project residents, as well as a protected pedestrian crossing between the new homes and the retail area to the north.

The Project site plan includes a multi-use path set back from the roadway along the south side of Turner Parkway that connects the residential and commercial uses, and a sidewalk along Admiral Callaghan Lane.

Concurrent with Project construction, Admiral Callaghan Lane will be widened to provide two through lanes in each direction along the project frontage, connecting to the four-lane sections to the north (north of Turner Parkway) and to the south. This widening project will include bicycle lanes in both directions.

Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Estimates are created for the daily condition and for the peak one-hour period during the weekday mid-day, the weekday evening commute, and Saturday mid-day. These three peak hours were selected for analysis, as it is expected that Costco volumes will be at their highest levels. Estimates were also created for the peak one-hour period during the weekday morning commute for the residential portion of the Project only. Project trip generation for the non-Costco retail and residential portions of the project were estimated using rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (9th Edition).

Trip generation for the Costco portion of the project was estimated using trip rates derived from counts taken at the existing Costco driveway (serving all store and gas station trips) in November 2017, and at the existing Costco gas station entry in July 2019. (Note that Costco representatives indicate that gas

station usage does not vary substantially by season, so the July counts can be considered a good representation of year-round activity). The latter counts were taken to verify the gas station trip generation (as a subset of the total Costco trip generation) and to estimate the effect of the expanded number of fueling stations with the proposed project from 16 (at the existing site) to 30 (with the Project). The count data and the derivation of the trip generation rates is presented in **Appendix F**.

Trips associated with the existing Costco are presented as negative trips, since they will be removed from the roadway network with the construction of the Project. In the Existing With Project Condition, the existing Costco site is assumed to remain vacant. The net new trips under these conditions represent the removal of the existing Costco trips and the addition of the new Costco, retail and residential trips. Trip generation estimates for the Existing With Project Condition are presented in **Table 5A.** In the Near-Term With Project and Cumulative With Project Conditions, the existing Costco site is assumed to be occupied by a new general retail tenant. The net new trips in these scenarios represent the removal of the existing Costco trips, the addition of retail trips at the existing Costco site, and the addition of Costco, retail, and residential trips at the new Costco site. Trip generation estimates for the Near-Term with Project and Cumulative with Project Conditions are presented in **Table 5B.** Trip generation rates are presented in **Table 5C** for each land use, for reference.

Table 5A: Project Trip Generation Rates

Land Use	Quantity	ITE Code	AM Peak Hour			Weekday Mid-day Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour			Daily
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Project Site															
New Costco[1]	152 ksf	Custom	50%	50%	1.22[3]	63%	37%	9.86	63%	37%	11.37	54%	46%	11.95	102.49
Retail[2]	30 ksf	820	62%	38%	0.96	50%	50%	3.22	50%	50%	3.71	49%	51%	4.82	42.70
Residential	178 DU	210	25%	75%	0.75	50%	50%	0.87	48%	52%	1.00	52%	48%	0.93	9.52
Existing Costco Site															
Existing Costco[1]	125 ksf	Custom	50%	50%	1.22[3]	63%	37%	9.86	63%	37%	11.37	54%	46%	11.95	102.49
Retail	125 ksf	820	62%	38%	0.96	50%	50%	3.22	50%	50%	3.71	49%	51%	4.82	42.70

Notes:
(1) Costco daily trip generation rate was developed through the review of data provided by Kittelson dated 7/22/19 (data is provided in Appendix F). The average Costco data provided by Kittelson was compared to the existing Vallejo Costco data to generate an estimated daily trip rate. The Costco Sunday daily trip rate was calculated to be 94.35.
(2) The trip generation was estimated with an assumption of 30,000 square feet, making it slightly conservative since the final project retail space is 27,490 square feet. In addition, the proposed retail uses include a fast food restaurant with a drive-through. While this land use category generates higher trips than general retail uses, the overall trip generation estimate for the proposed project adequately reflects the additional trips that would be generated by the drive-through restaurant (refer to detailed analysis in Appendix F).
(3) Costco AM Peak hour trip rates represent trips to and from the gas pumps only.
Source: Trip Generation Manual (9th Edition), ITE, 2012; Fehr & Peers, December 2019

Table 5B: Project Trip Generation Estimates – for Existing With Project Conditions

Land Use	Quantity	ITE Code	AM Peak Hour			Weekday Mid-day Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour			Daily
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Project Site															
New Costco	152 ksf	Custom	95	95	190	754	754	1,508	870	870	1,740	896	932	1,828	15,590
Retail	30 ksf	820	55	48	102	48	48	96	53	58	111	75	69	145	1,280
Residential	178 DU	210	33	100	133	94	55	150	109	64	173	87	74	161	1,690
Project Site Total Trips			**183**	**243**	**425**	**897**	**858**	**1,755**	**1,032**	**992**	**2,024**	**1,058**	**1,076**	**2,134**	**18,560**
Existing Costco Site															
Existing Costco	125 ksf	Custom	*(76)*	*(76)*	*(152)*	*(618)*	*(618)*	*(1,237)*	*(713)*	*(713)*	*(1,427)*	*(735)*	*(764)*	*(1,499)*	*(12,860)*
Existing Costco Site Total Trips			***(76)***	***(76)***	***(152)***	***(618)***	***(618)***	***(1,237)***	***(713)***	***(713)***	***(1,427)***	***(735)***	***(764)***	***(1,499)***	***(12,860)***
Net New Trips			**107**	**167**	**273**	**279**	**240**	**518**	**319**	**279**	**598**	**323**	**311**	**635**	**5,700**

Source: Trip Generation Manual (9th Edition), ITE, 2012; Fehr & Peers, December 2019.

Table 5C: Project Trip Generation Estimates: for Near-Term and Cumulative Conditions

Land Use	Quantity	ITE Code	AM Peak Hour			Weekday Mid-day Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour			Daily
			In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Project Site															
New Costco	152 ksf	Custom	95	95	190	754	754	1,508	870	870	1,740	896	932	1,828	15,590
Retail	30 ksf	820	55	48	102	48	48	96	53	58	111	75	69	145	1,280
Residential	178 DU	210	33	100	133	94	55	150	109	64	173	87	74	161	1,690
Project Site Total Trips			**183**	**243**	**425**	**897**	**858**	**1,755**	**1,032**	**992**	**2,024**	**1,058**	**1,076**	**2,134**	**18,560**
Existing Costco Site															
Existing Costco	125 ksf	Custom	*(76)*	*(76)*	*(152)*	*(618)*	*(618)*	*(1,237)*	*(713)*	*(713)*	*(1,427)*	*(735)*	*(764)*	*(1,499)*	*(12,860)*
Retail	125 ksf	820	75	46	121	202	202	403	233	233	465	296	308	605	5,360
Existing Costco Site Net Trips			***(1)***	***(30)***	***(31)***	***(417)***	***(417)***	***(833)***	***(481)***	***(481)***	***(961)***	***(438)***	***(456)***	***(894)***	***(7,500)***
Net New Trips			**182**	**213**	**394**	**480**	**441**	**922**	**552**	**511**	**1,063**	**620**	**620**	**1,239**	**11,060**

Source: Trip Generation Manual (9th Edition), ITE, 2012; Fehr & Peers, December 2019

Trip Distribution

Project trip distribution refers to the directions of approach and departure that vehicles would take to access and leave the site. Estimates of regional project trip distribution were developed based on existing travel patterns in the area, a select zone analysis of commercial and residential zones using the Napa/Sonoma travel demand model, and the location of other Costco stores in the region. The resulting trip distribution percentages are shown on **Figure 4.**

Trip Assignment

Project trips were assigned to the roadway network based on the distribution patterns shown in **Figure 4.** Trips associated with the existing Costco site were removed from the roadway network, and trips associated with the proposed project and the re-use of the existing Costco site (for the near-term and cumulative cases) were added to the network. This results in certain movements having lower volumes in the With Project condition than the Without Project condition.

Figure 5A, B and **C** present the net trip assignment generated by the existing Costco site for the existing, near-term and cumulative cases, respectively. For the existing case (Figure 5A), the trips are eliminated trips due to the site being vacated. For the near-term and cumulative cases (Figures 5B and 5C), the trips are the net change in trips from the vacated Costco and the new general retail use. (Note that the cumulative case roadway network includes changes related to the planned re-construction of the I-80/Redwood Parkway interchange, and thus the volumes are shown on a separate figure.)

Figures 6A and **6B** present the trip assignment for the proposed project site, for the Existing/Near-Term and Cumulative cases, respectively.

Figures 7A, **7B, and 7C** present the net change in trips at all intersections, based on the changes at the existing Costco site and the proposed project uses.

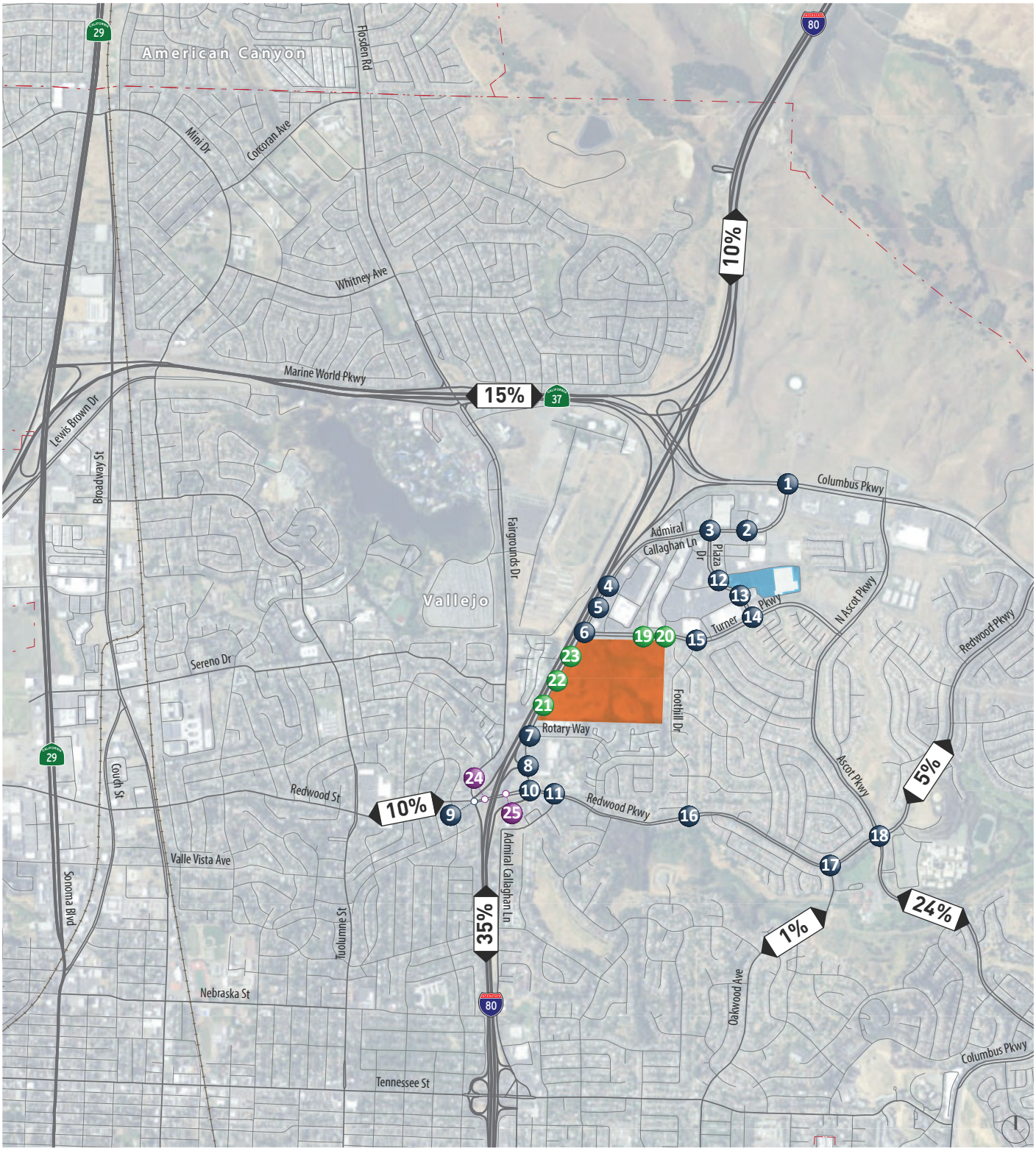
The assignment of project site Costco/retail trips to the three driveways on Admiral Callaghan Lane was based on several factors, including the distribution of proposed uses on the Project site, the regional distribution of trips to/from the north and south, the presence of a traffic signal at the middle driveway, and an evaluation of travel path options for drivers travelling to and from I-80 Westbound. Projected congestion between the project site and the I-80/Redwood Parkway interchange during peak hours may cause some drivers needing to access I-80 westbound to travel to the north to the Columbus Parkway interchange rather than south to Redwood Parkway. An evaluation of competing travel times in the cumulative analysis

(Chapter 6) was used to estimate the number of drivers who would divert. The volumes at the project driveways are based on this assessment.

Approximately two thirds of inbound vehicle trips were assumed to travel northbound on Admiral Callaghan Lane and enter the site via a right turn, the other third travel southbound on Admiral Callaghan Lane and enter the site via the left turn pockets at each driveway. The northbound inbound vehicles were distributed almost evenly across the three driveways, with slightly more vehicles assigned to the northern and middle driveways. Half of the southbound inbound vehicles were assigned to the middle driveway, as left-turning vehicles would primarily utilize the signalized intersection. Approximately 40 percent of the southbound inbound vehicle were assigned to the northern driveway and the remaining 10 percent were assigned to the southern driveway.

Approximately two thirds of outbound vehicle trips were assumed to travel northbound on Admiral Callaghan Lane and exit the site from a right turn, the other third travel southbound on Admiral Callaghan Lane and exit the site at either the middle or northern driveway. Forty percent of the northbound outbound vehicles were assigned to the middle driveway, and 30 percent assigned to both the northern and southern driveways. Right-turning vehicles would be less likely to show a preference for a signalized intersection; however, the middle driveway would still provide the most direct egress point for a substantial portion of the site. Vehicles can only exit the site from a left turn at the middle or northern driveways. Eighty percent of the southbound outbound vehicles were assigned to the middle driveway, as left-turning vehicles would primarily utilize the signalized intersection. The remaining 20 percent were assigned to the northern driveway.

It is acknowledged that the actual use of the driveways will vary from day to day and may be different than these assumptions.

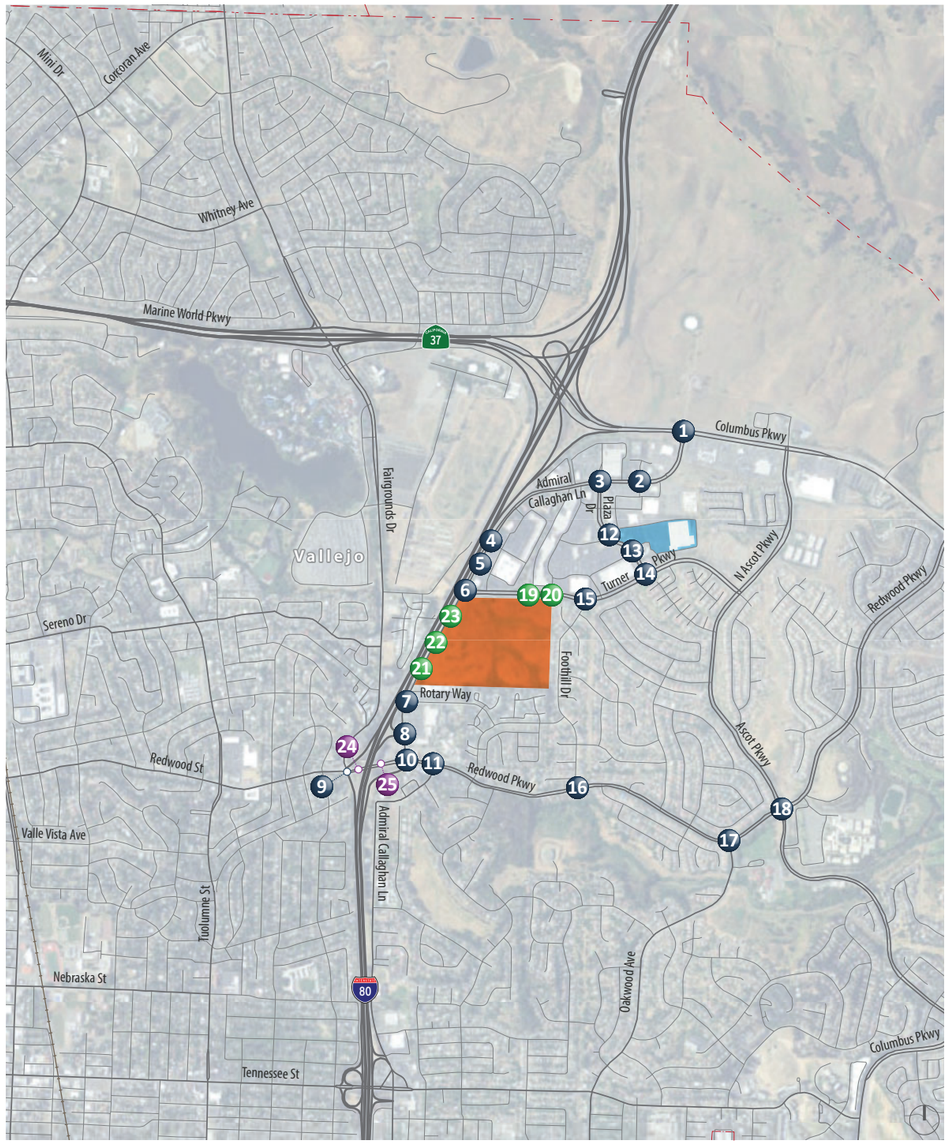


Project Site | Existing Costco Site | # Study Intersection | # Project Access Intersection | # Future Intersection

X% Project Trip Distribution

Figure 4

Project Trip Distribution



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

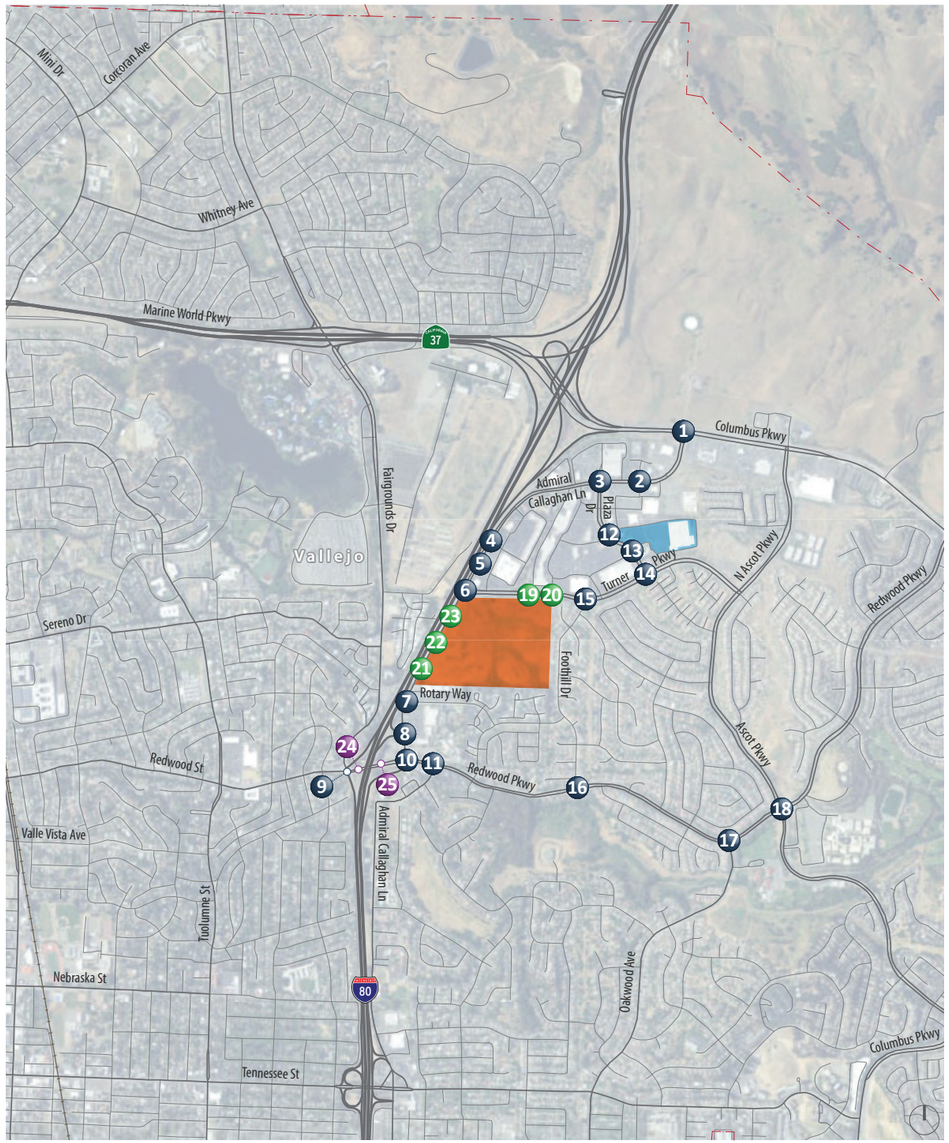
Project Access Intersection

Future Intersection



Figure 5A

Project Trip Assignment for Existing Costco Site (Removed Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

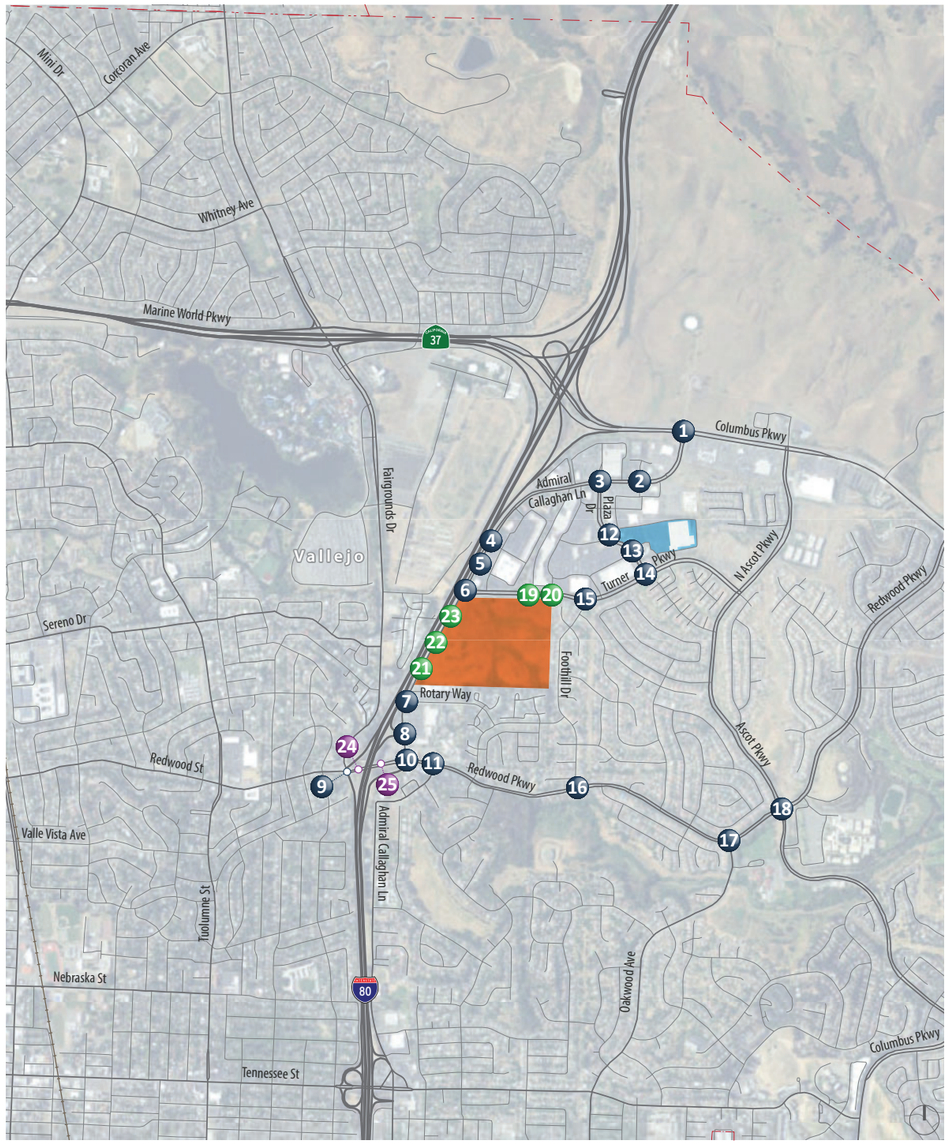
Project Access Intersection

Future Intersection



Figure 5B

Project Trip Assignment for Near-Term Conditions: Re-used Costco Site (Net New Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

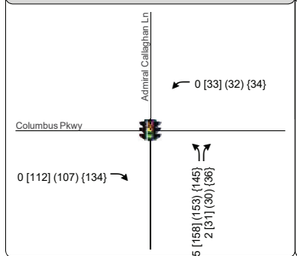
Existing Costco Site

Study Intersection

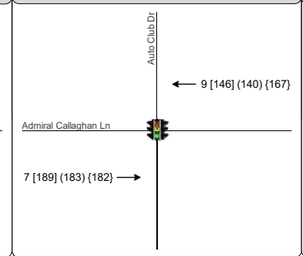
Project Access Intersection

Future Intersection

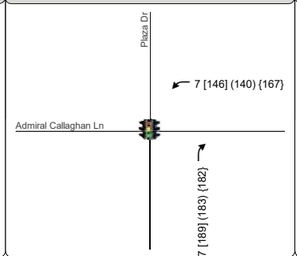
1. Admiral Callaghan Ln/Columbus Pkwy



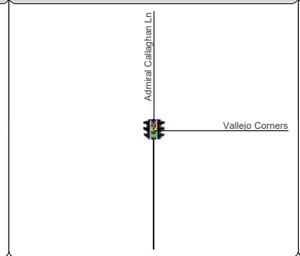
2. Auto Club Dr/Admiral Callaghan Ln



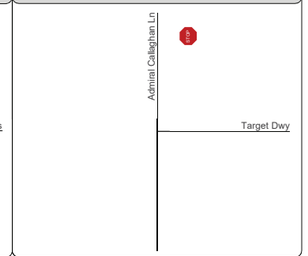
3. Plaza Dr/Admiral Callaghan Ln



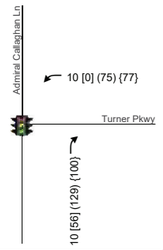
4. Admiral Callaghan Ln/Vallejo Corners



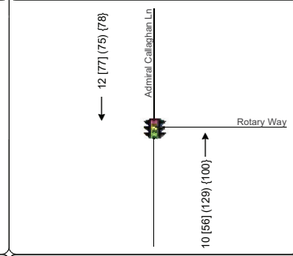
5. Admiral Callaghan Ln/Target Driveway



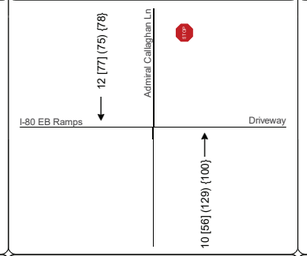
6. Admiral Callaghan Ln/Turner Pkwy



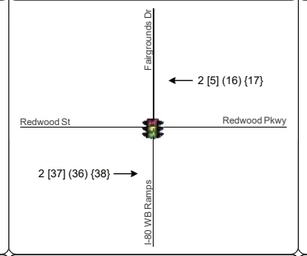
7. Admiral Callaghan Ln/Rotary Way



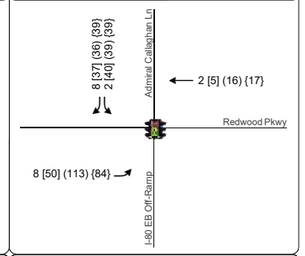
8. Admiral Callaghan Ln/I-80 EB Ramps/Driveway



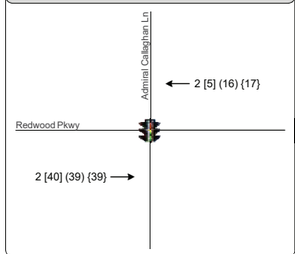
9. Fairgrounds Dr/I-80 WB Ramps/Redwood St



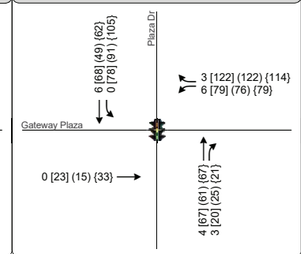
10. Admiral Callaghan Ln/I-80 EB Off-Ramp/Redwood Pkwy



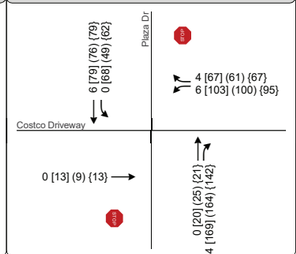
11. Admiral Callaghan Ln/Redwood Pkwy



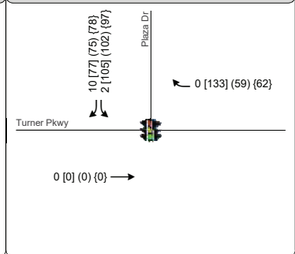
12. Plaza Dr/Gateway Plaza



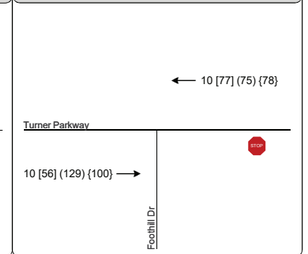
13. Plaza Dr/Costco Driveway



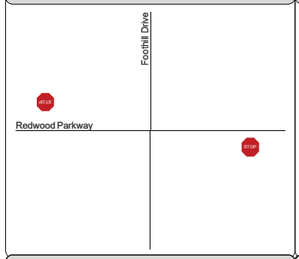
14. Plaza Dr/Turner Pkwy



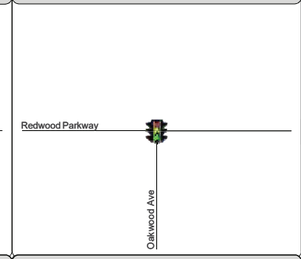
15. Turner Pkwy/Foothill Dr



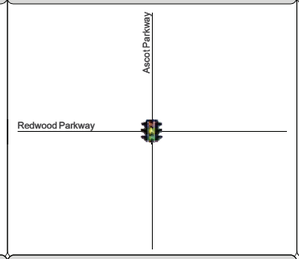
16. Foothill Dr/Redwood Pkwy



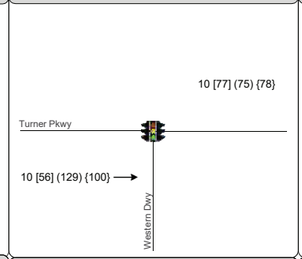
17. Oakwood Ave/Redwood Pkwy



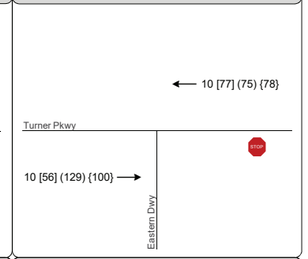
18. Ascot Pkwy/Redwood Pkwy



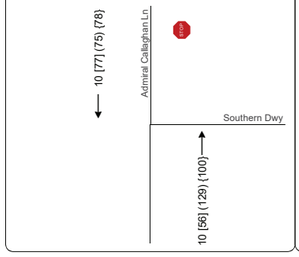
19. Turner Pkwy/Western Residential Driveway



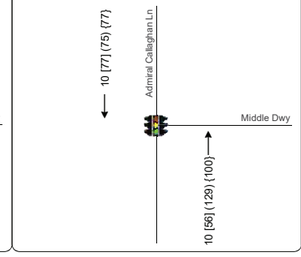
20. Turner Pkwy/Eastern Residential Driveway



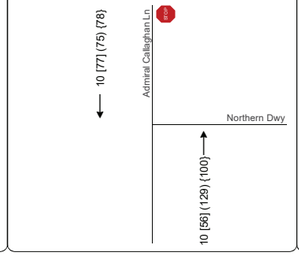
21. Admiral Callaghan Ln/Southern Driveway



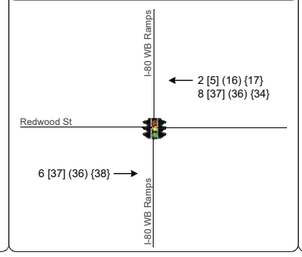
22. Admiral Callaghan Ln/Middle Driveway



23. Admiral Callaghan Ln/Northern Driveway



24. Redwood St/I-80 WB Ramps



25. Redwood Pkwy/I-80 EB Ramps

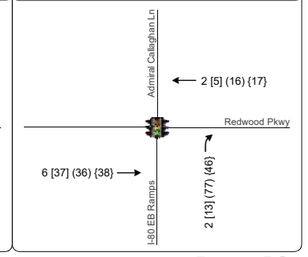
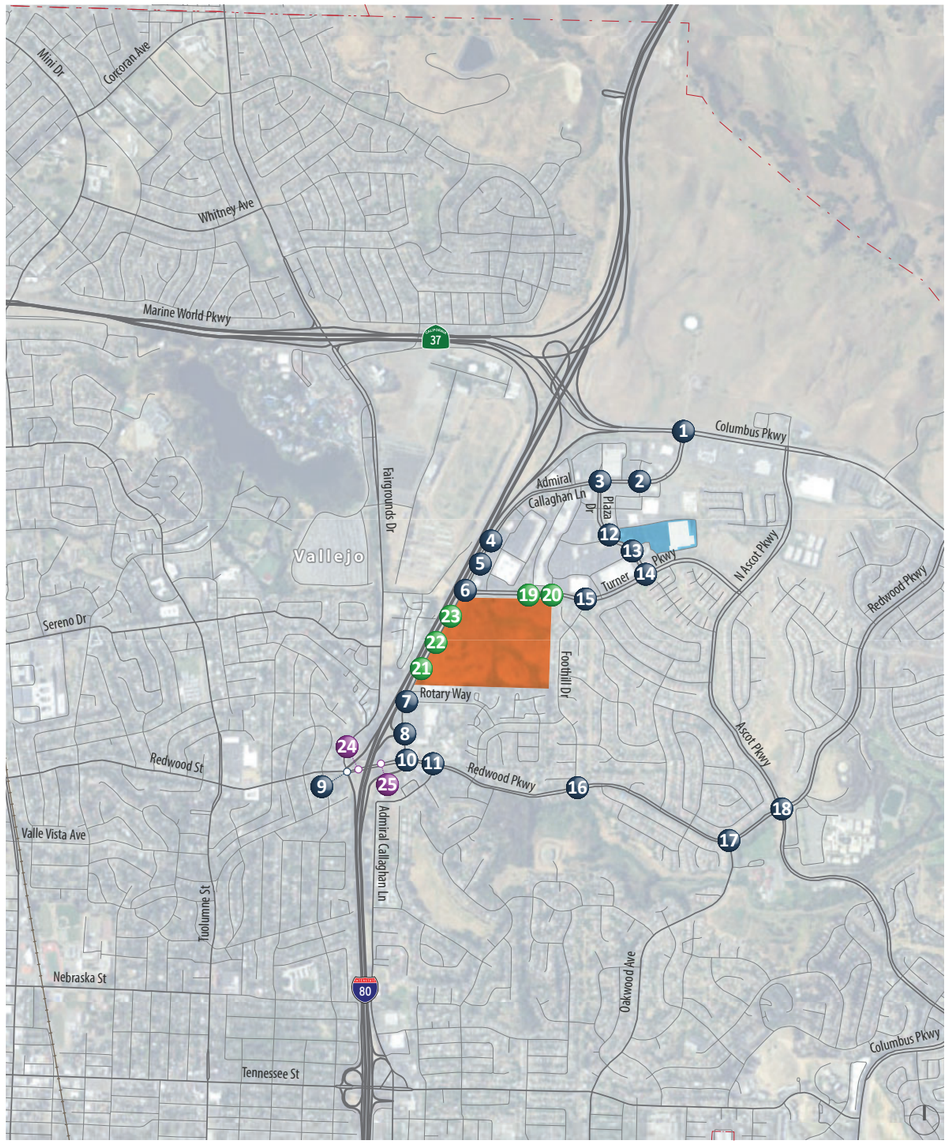


Figure 5C

Project Trip Assignment for Cumulative Conditions: Re-used Costco Site (Net New Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

Project Access Intersection

Future Intersection

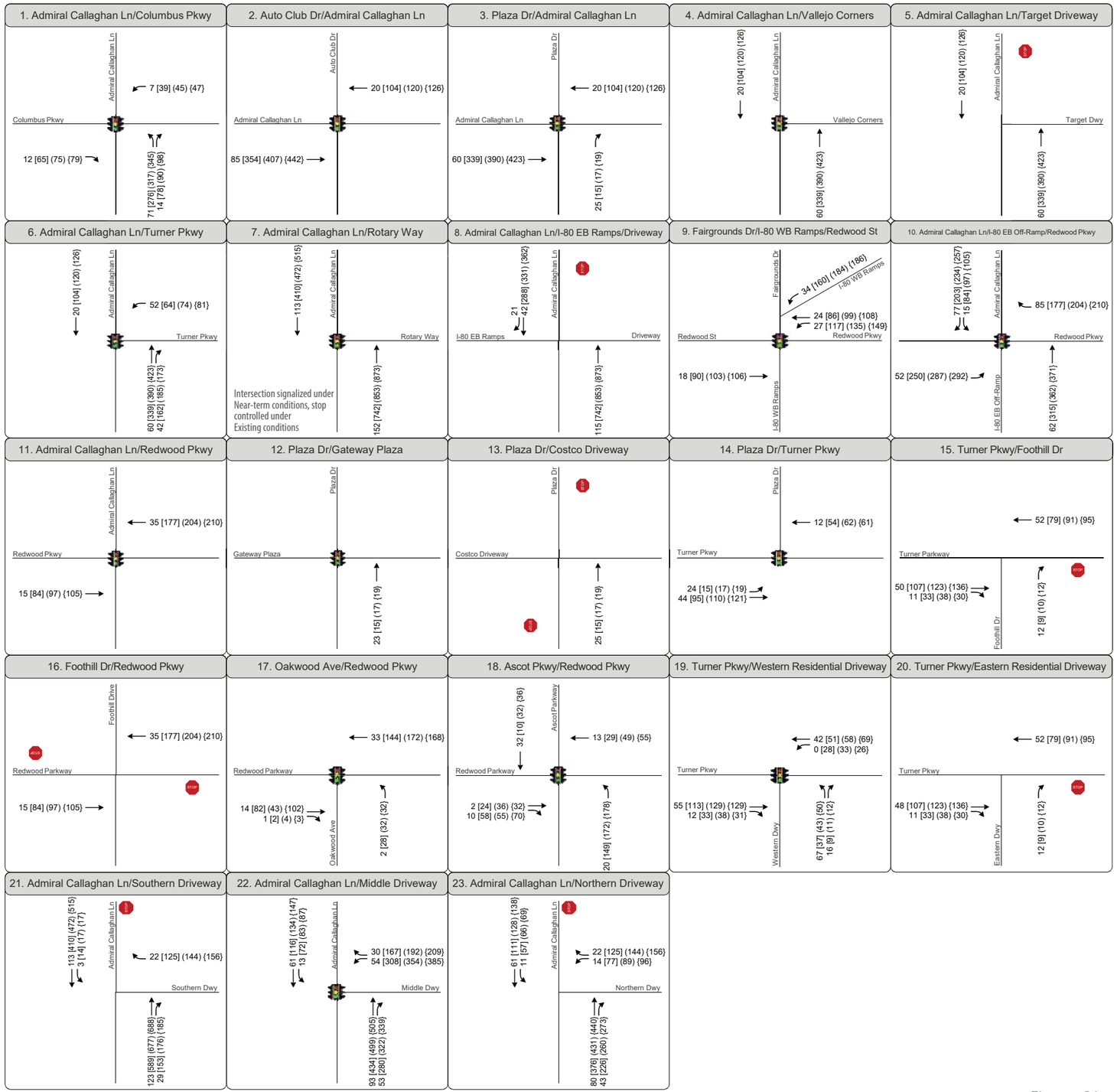
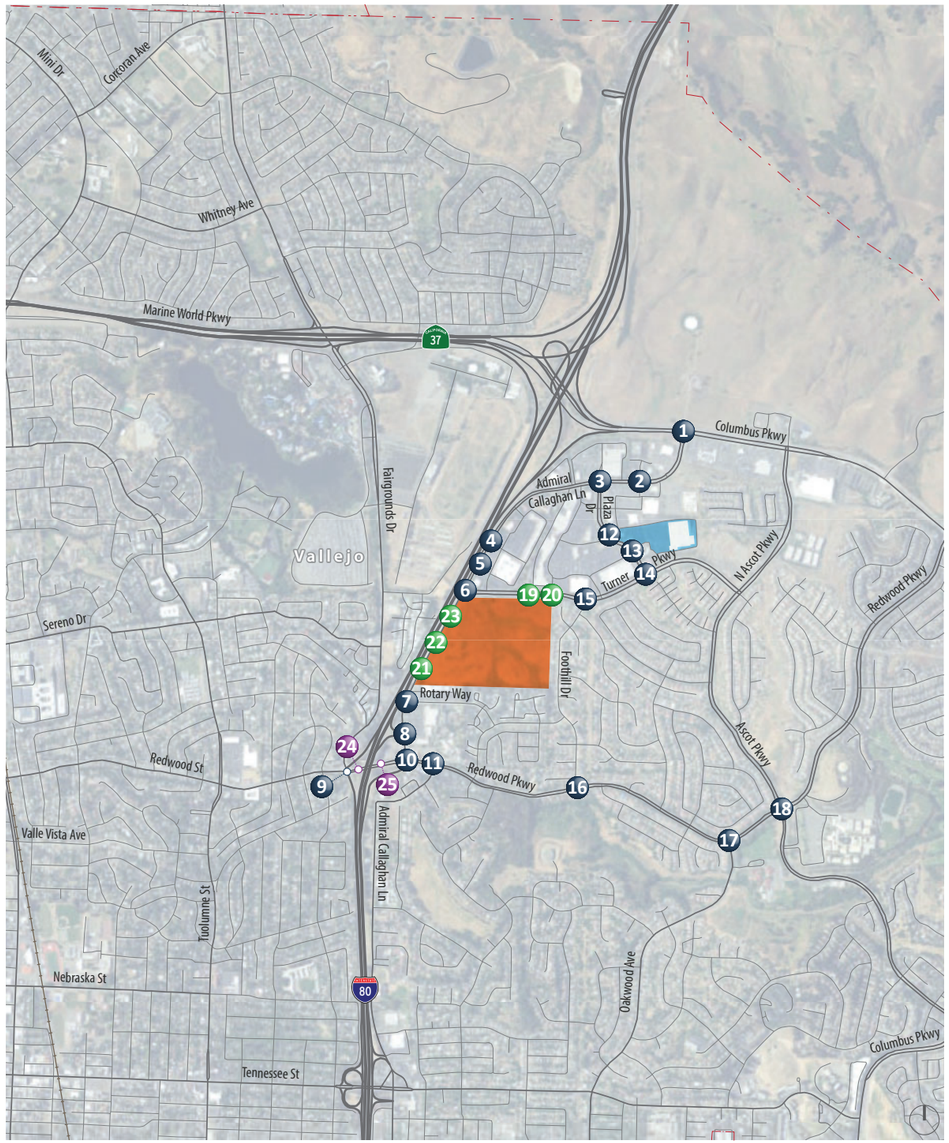


Figure 6A

Project Trip Assignment for Existing and Near-Term Conditions: Project Site (Added Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

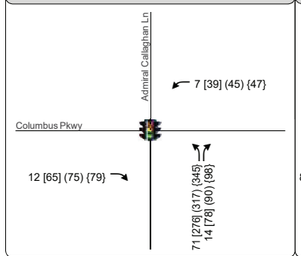
Existing Costco Site

Study Intersection

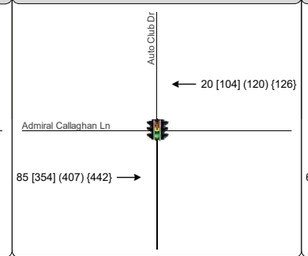
Project Access Intersection

Future Intersection

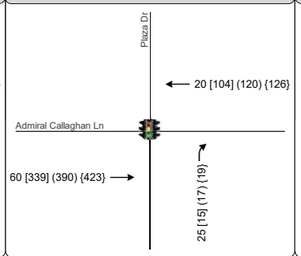
1. Admiral Callaghan Ln/Columbus Pkwy



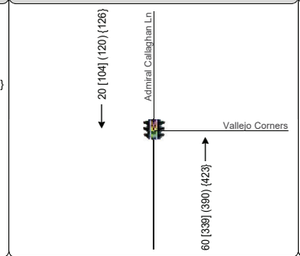
2. Auto Club Dr/Admiral Callaghan Ln



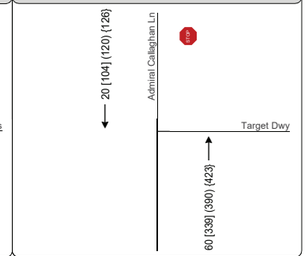
3. Plaza Dr/Admiral Callaghan Ln



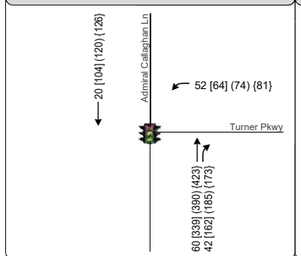
4. Admiral Callaghan Ln/Vallejo Corners



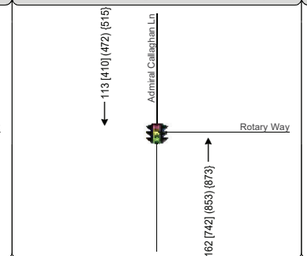
5. Admiral Callaghan Ln/Target Driveway



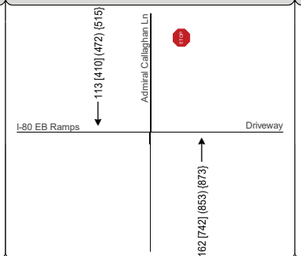
6. Admiral Callaghan Ln/Turner Pkwy



7. Admiral Callaghan Ln/Rotary Way



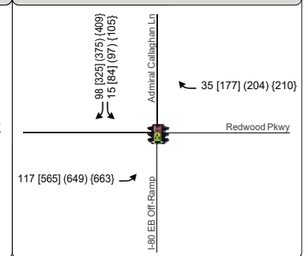
8. Admiral Callaghan Ln/I-80 EB Ramps/Driveway



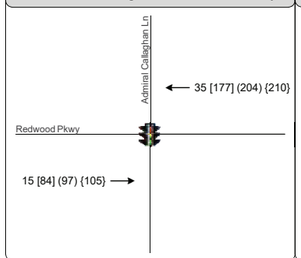
9. Fairgrounds Dr/I-80 WB Ramps/Redwood St



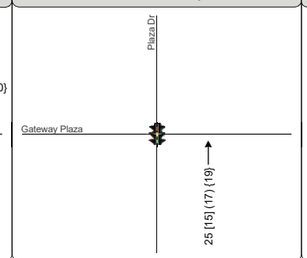
10. Admiral Callaghan Ln/I-80 EB Off-Ramp/Redwood Pkwy



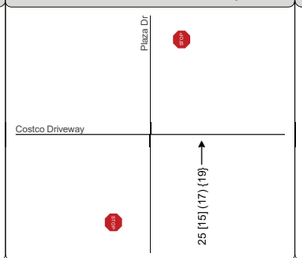
11. Admiral Callaghan Ln/Redwood Pkwy



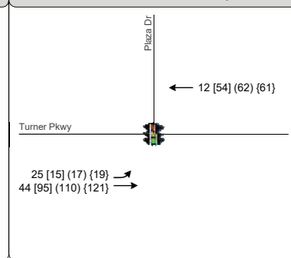
12. Plaza Dr/Gateway Plaza



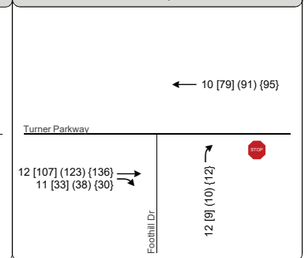
13. Plaza Dr/Costco Driveway



14. Plaza Dr/Turner Pkwy



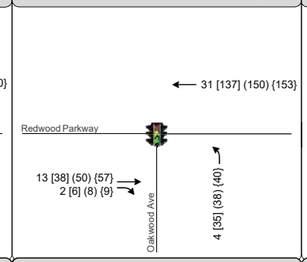
15. Turner Pkwy/Foothill Dr



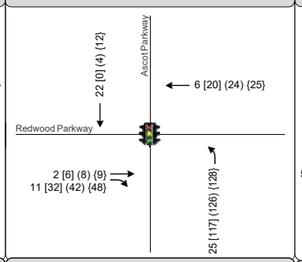
16. Foothill Dr/Redwood Pkwy



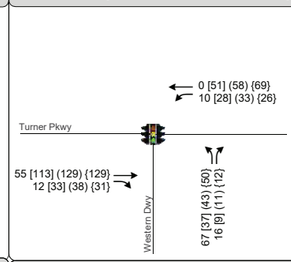
17. Oakwood Ave/Redwood Pkwy



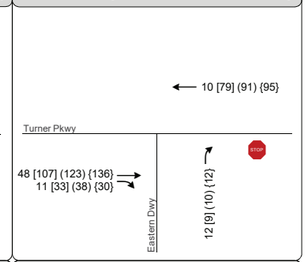
18. Ascot Pkwy/Redwood Pkwy



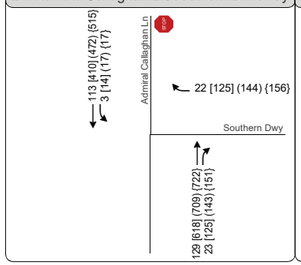
19. Turner Pkwy/Western Residential Driveway



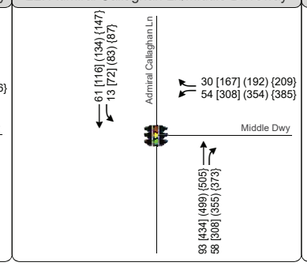
20. Turner Pkwy/Eastern Residential Driveway



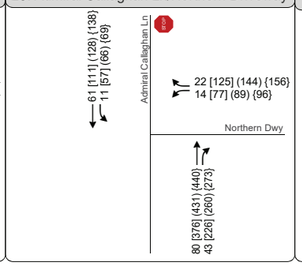
21. Admiral Callaghan Ln/Southern Driveway



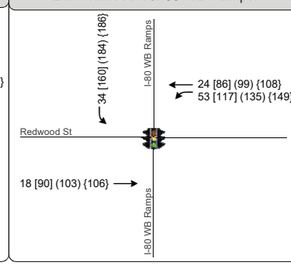
22. Admiral Callaghan Ln/Middle Driveway



23. Admiral Callaghan Ln/Northern Driveway



24. Redwood St/I-80 WB Ramps



25. Redwood Pkwy/I-80 EB Ramps

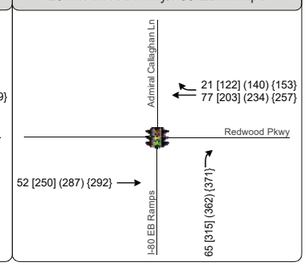
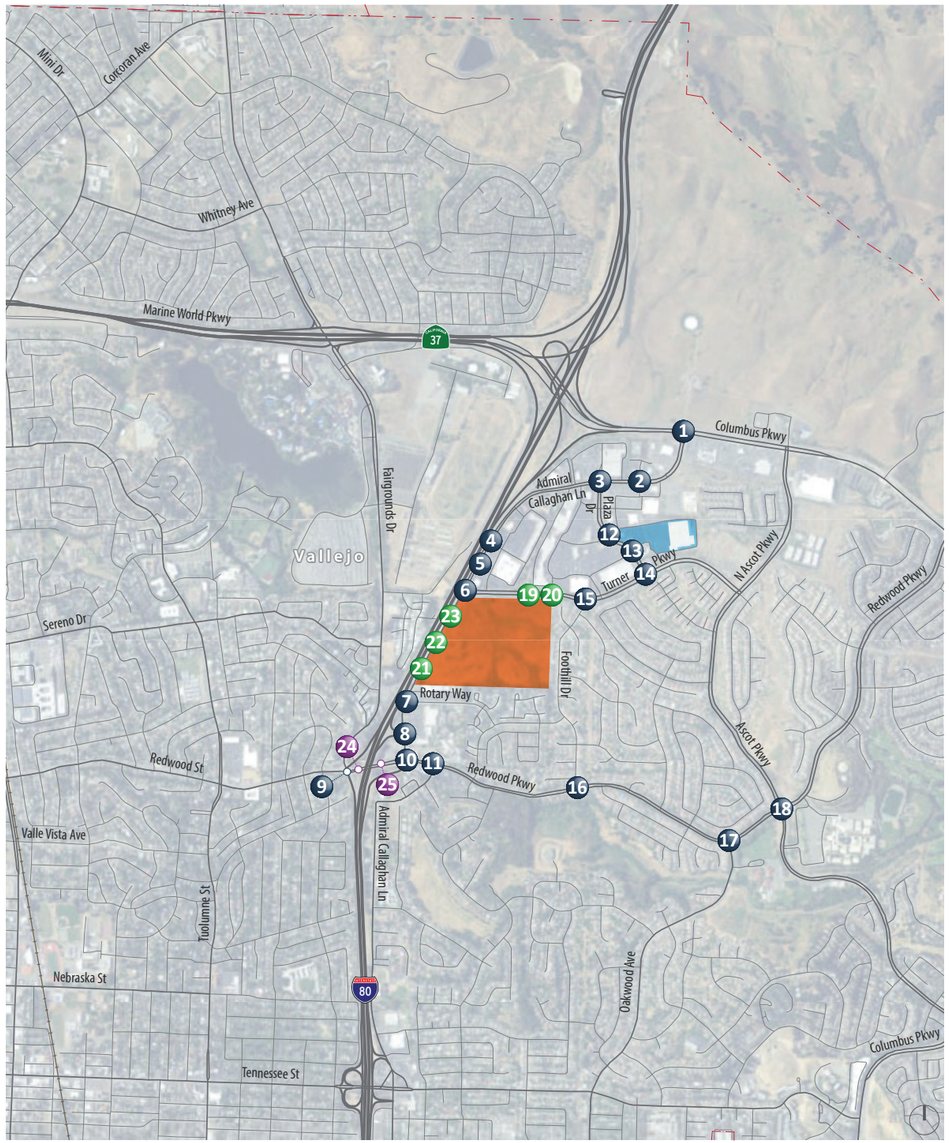


Figure 6B

Project Trip Assignment for Cumulative Conditions: Project Site (Added Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

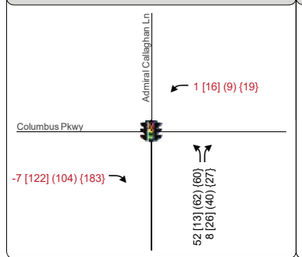
Project Access Intersection

Future Intersection

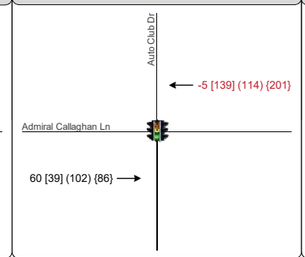
Negative Trips

Positive Trips

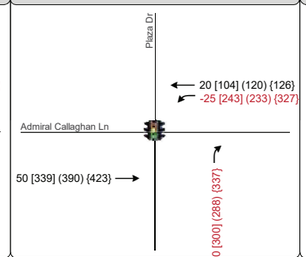
1. Admiral Callaghan Ln/Columbus Pkwy



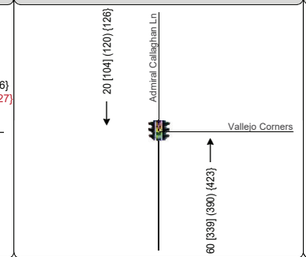
2. Auto Club Dr/Admiral Callaghan Ln



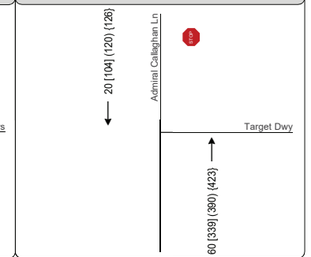
3. Plaza Dr/Admiral Callaghan Ln



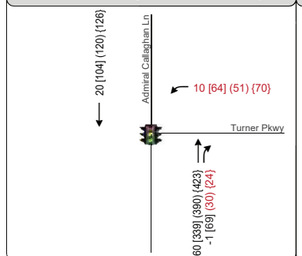
4. Admiral Callaghan Ln/Vallejo Corners



5. Admiral Callaghan Ln/Target Driveway



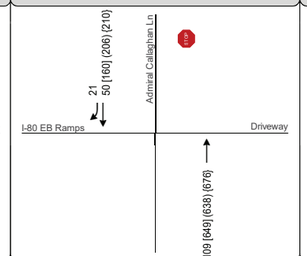
6. Admiral Callaghan Ln/Turner Pkwy



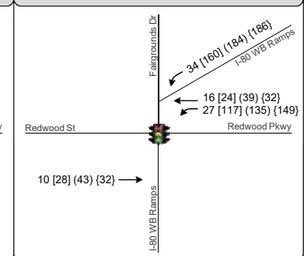
7. Admiral Callaghan Ln/Rotary Way



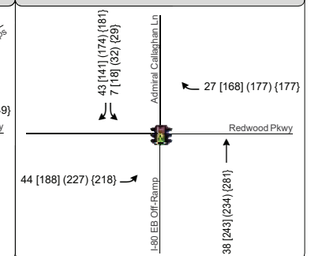
8. Admiral Callaghan Ln/I-80 EB Ramps/Driveway



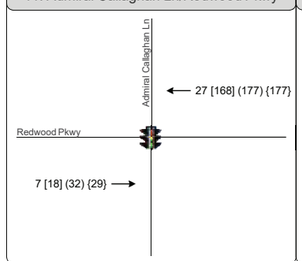
9. Fairgrounds Dr/I-80 WB Ramps/Redwood St



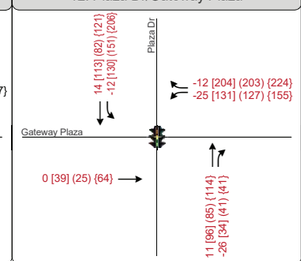
10. Admiral Callaghan Ln/I-80 EB Off-Ramp/Redwood Pkwy



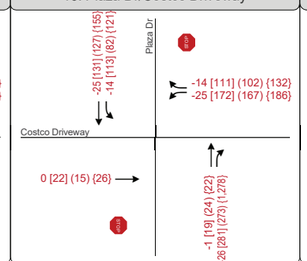
11. Admiral Callaghan Ln/Redwood Pkwy



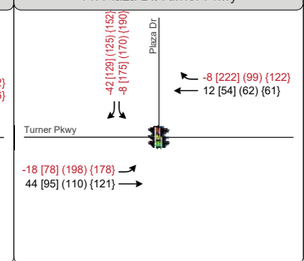
12. Plaza Dr/Gateway Plaza



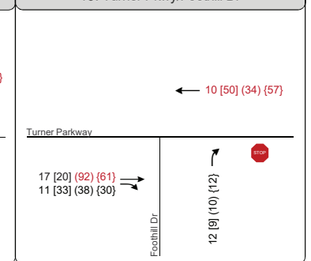
13. Plaza Dr/Costco Driveway



14. Plaza Dr/Turner Pkwy



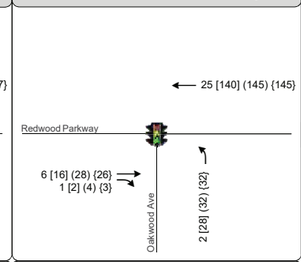
15. Turner Pkwy/Foothill Dr



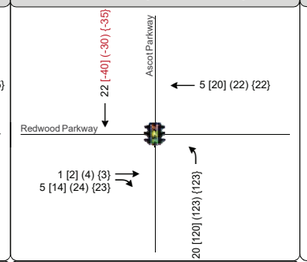
16. Foothill Dr/Redwood Pkwy



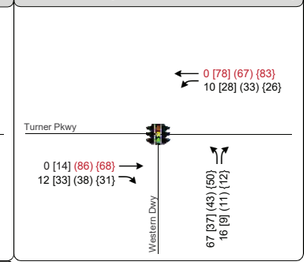
17. Oakwood Ave/Redwood Pkwy



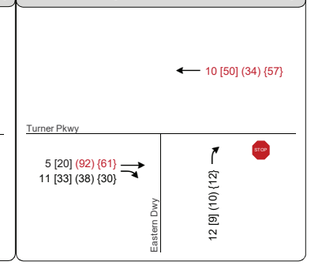
18. Ascot Pkwy/Redwood Pkwy



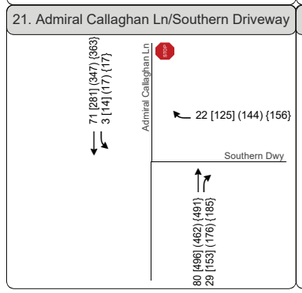
19. Turner Pkwy/Western Residential Driveway



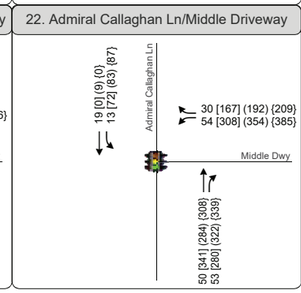
20. Turner Pkwy/Eastern Residential Driveway



21. Admiral Callaghan Ln/Southern Driveway



22. Admiral Callaghan Ln/Middle Driveway



23. Admiral Callaghan Ln/Northern Driveway

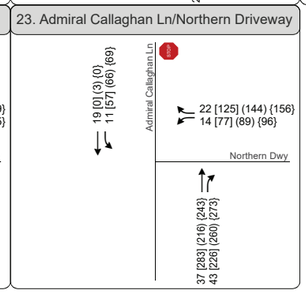
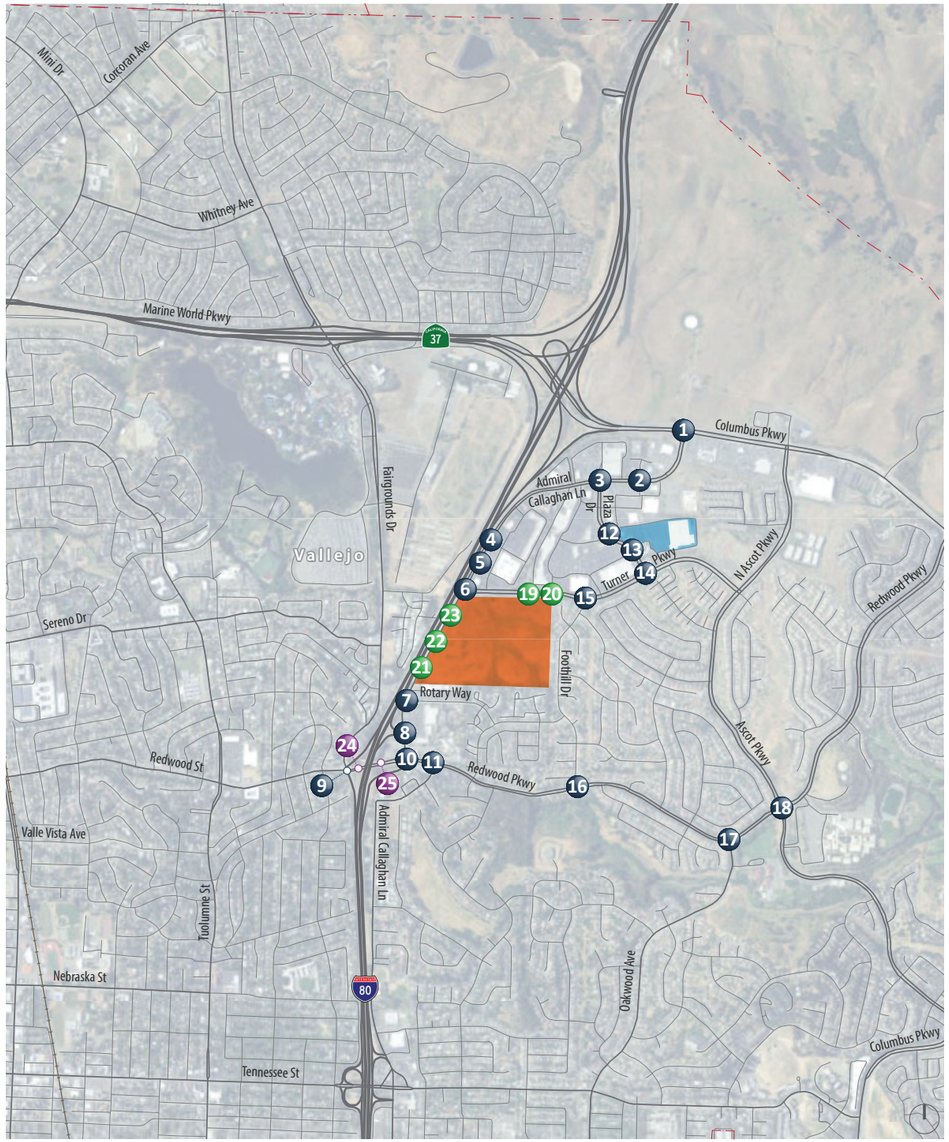


Figure 7A

Existing Project Trip Assignment (Total Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

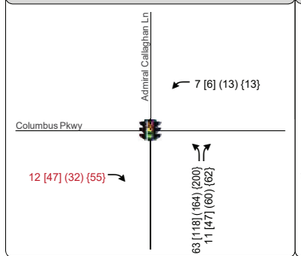
Project Access Intersection

Future Intersection

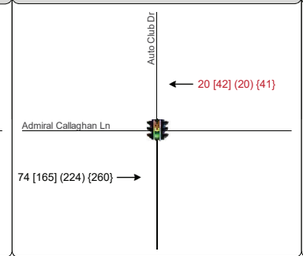
Negative Trips

Positive Trips

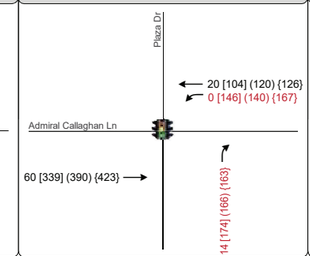
1. Admiral Callaghan Ln/Columbus Pkwy



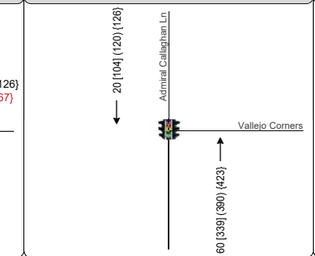
2. Auto Club Dr/Admiral Callaghan Ln



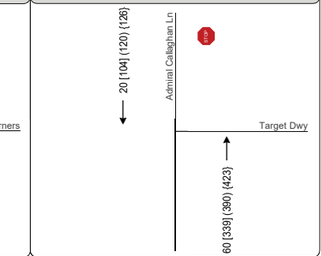
3. Plaza Dr/Admiral Callaghan Ln



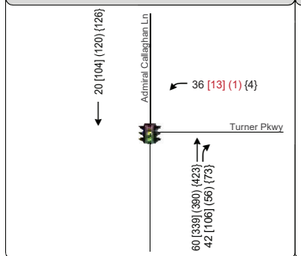
4. Admiral Callaghan Ln/Vallejo Corners



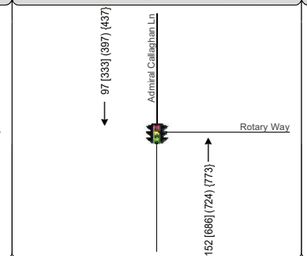
5. Admiral Callaghan Ln/Target Driveway



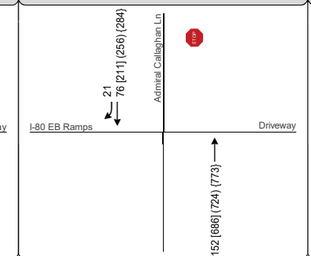
6. Admiral Callaghan Ln/Turner Pkwy



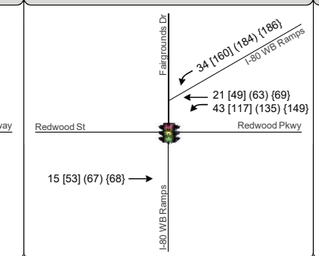
7. Admiral Callaghan Ln/Rotary Way



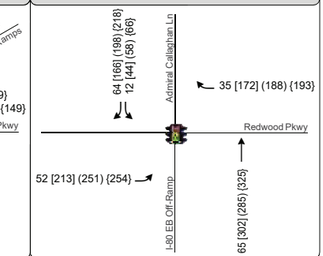
8. Admiral Callaghan Ln/I-80 EB Ramps/Driveway



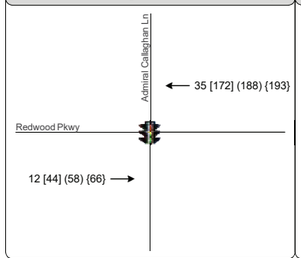
9. Fairgrounds Dr/I-80 WB Ramps/Redwood St



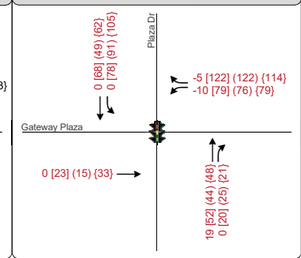
10. Admiral Callaghan Ln/I-80 EB Off-Ramp/Redwood Pkwy



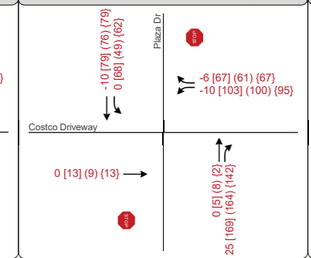
11. Admiral Callaghan Ln/Redwood Pkwy



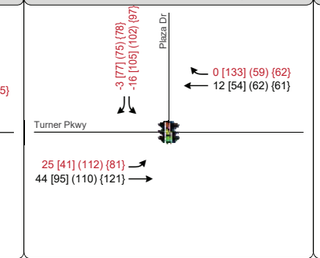
12. Plaza Dr/Gateway Plaza



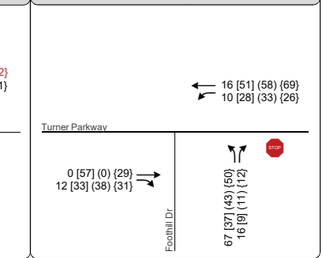
13. Plaza Dr/Costco Driveway



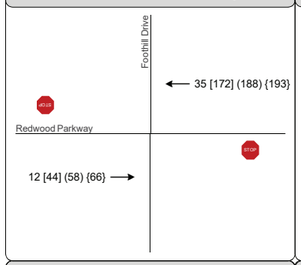
14. Plaza Dr/Turner Pkwy



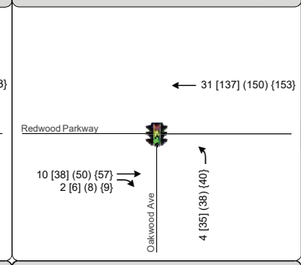
15. Turner Pkwy/Foothill Dr



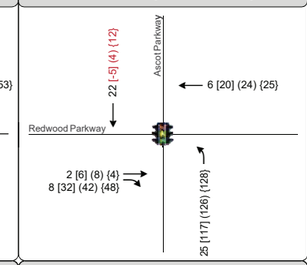
16. Foothill Dr/Redwood Pkwy



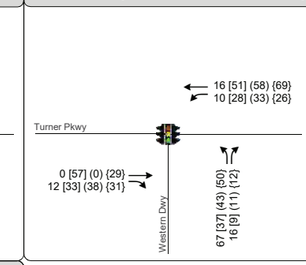
17. Oakwood Ave/Redwood Pkwy



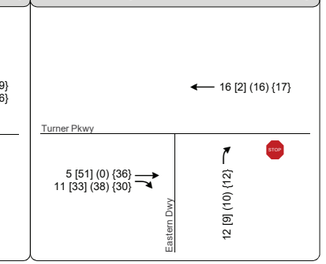
18. Ascot Pkwy/Redwood Pkwy



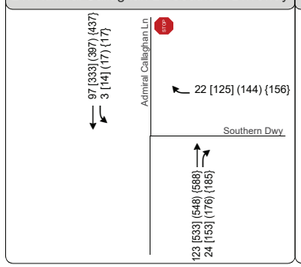
19. Turner Pkwy/Western Residential Driveway



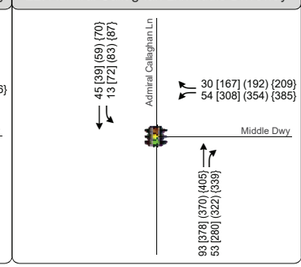
20. Turner Pkwy/Eastern Residential Driveway



21. Admiral Callaghan Ln/Southern Driveway



22. Admiral Callaghan Ln/Middle Driveway



23. Admiral Callaghan Ln/Northern Driveway

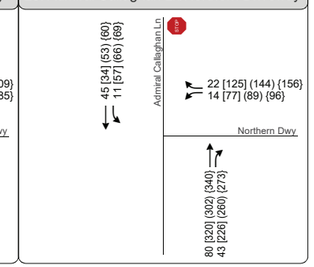
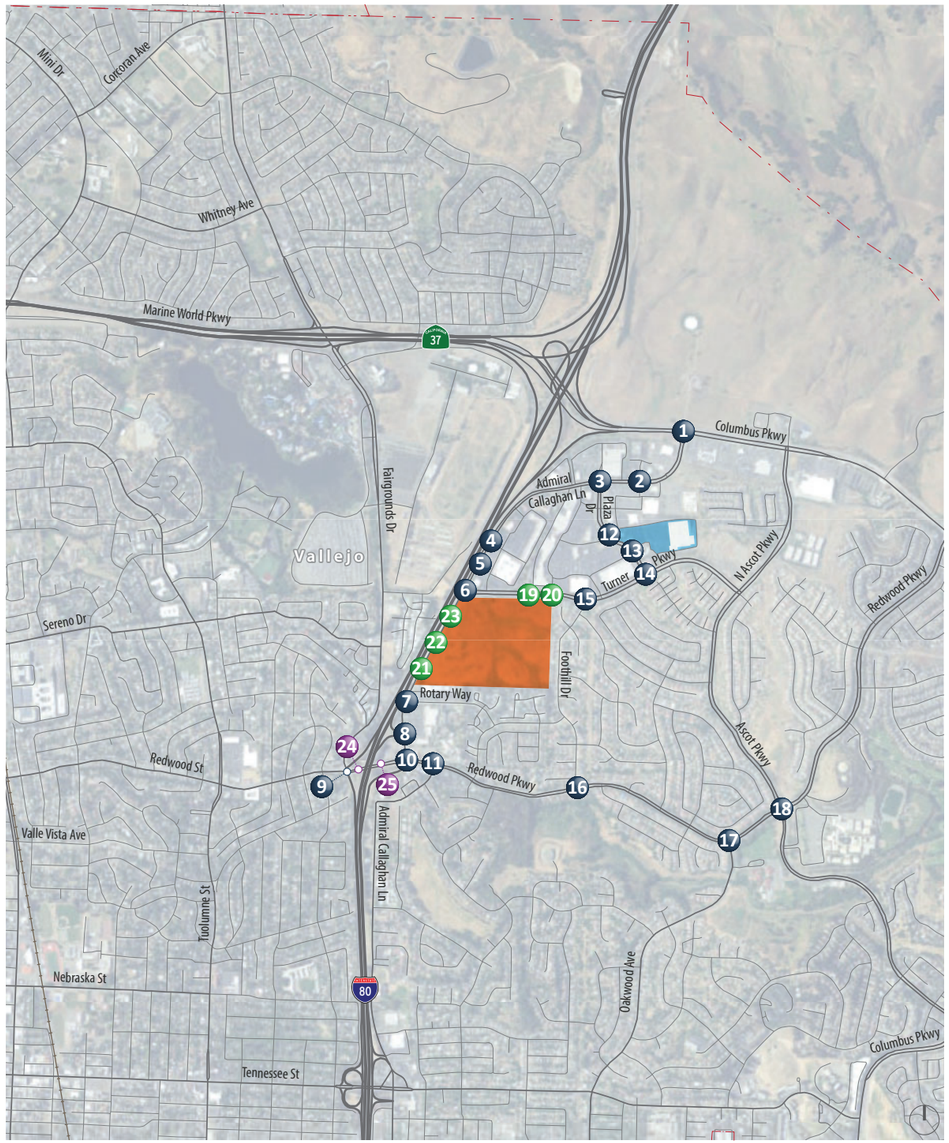


Figure 7B

Near-Term Project Trip Assignment (Total Trips)



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

Project Access Intersection

Future Intersection

Negative Trips

Positive Trips



Figure 7C

Cumulative Project Trip Assignment (Total Trips)

CHAPTER 4 – EXISTING WITH PROJECT CONDITIONS

This chapter evaluates potential off-site traffic impacts under Existing with Project conditions.

Traffic Volumes

The removal of the existing Costco site and addition of the new Costco site Project trips (Figure 5 and Figure 6) were added to the existing peak hour traffic volumes (Figure 3) to estimate the Existing With Project peak hour traffic volumes, shown in **Figure 8.**

Intersection Analysis

Peak hour intersection operations for the Existing With Project case are shown in **Table 6.** The following intersections operate deficiently in at least one peak hour:

- Intersection #7: Admiral Callaghan Lane/Rotary Way
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S)
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway

Note that intersection #13: Plaza Drive/Costco Driveway operates deficiently under existing conditions, but improves to acceptable operations under Existing With Project conditions due to the removal of the existing Costco trips. This intersection serves as the primary access driveway for the existing Costco. Under Existing With Project conditions, the existing Costco is removed and no new tenant is present in the space.

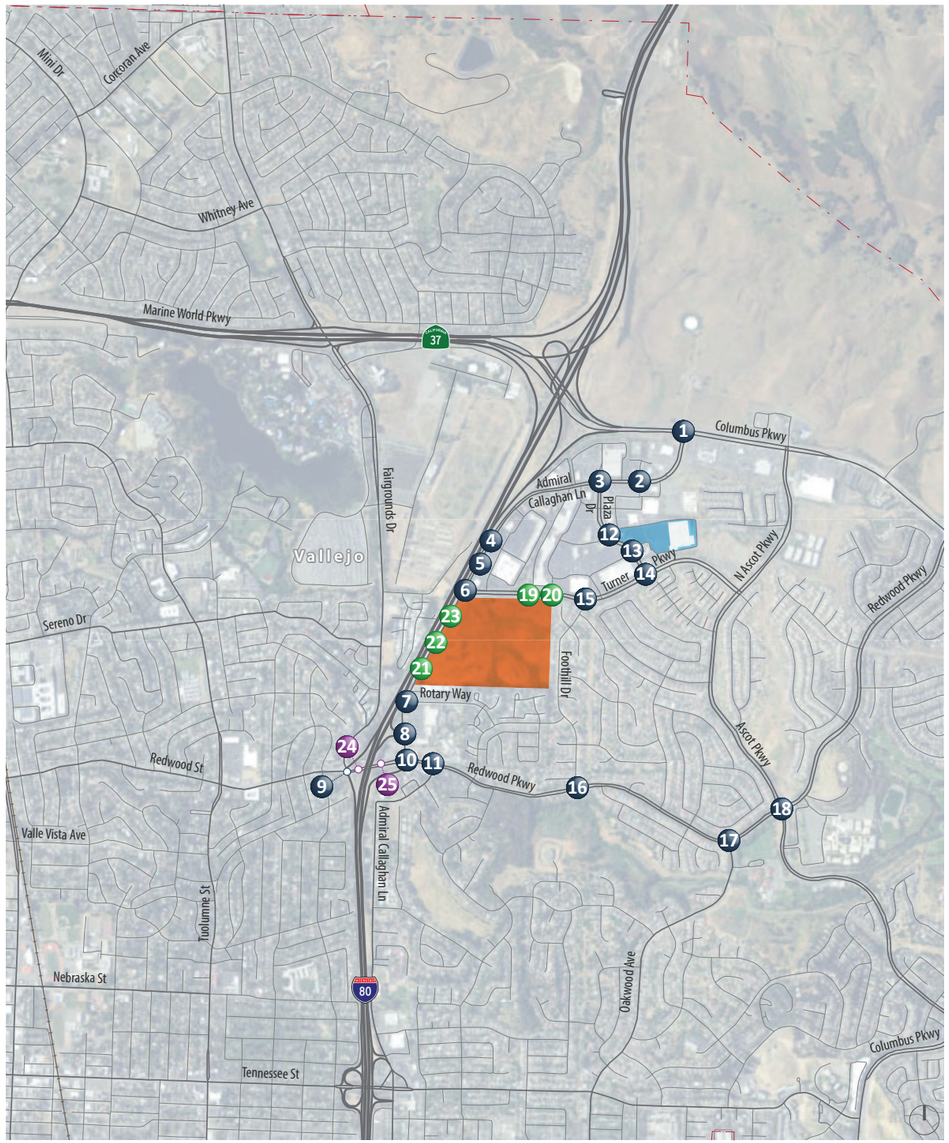
At intersection #7, the peak hour signal warrants are not met under Existing conditions in all four peak hours, but would be met under Existing With Project conditions. This intersection was analyzed as an all-

way stop under Existing With Project conditions, because it had not yet been signalized when most of the traffic counts were taken in 2017. A signal was installed in 2019.

At intersection # 8 signal warrants are met during the Weekday AM peak hour under Existing and Existing with Project conditions and are not met in the other three peak hours in Existing conditions, but would be met under Existing with Project conditions. At intersection #21 and intersection #22, peak hour signal warrants are met in all peak hours under Existing With Project conditions. However, as described in Chapter 3, these two project driveways are not proposed to be signalized.

Based on the significance thresholds presented in Section 2, the following 7 intersections are significantly impacted in the Existing With Project case:

- Intersection #7: Admiral Callaghan Lane/Rotary Way – In all but the AM peak hour, the worst approach operates at LOS B without the Project and the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F with the Project. As noted above, this intersection was analyzed as an all-way stop because that was the control type in 2017, but the intersection has since had a signal installed.
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps – In the Saturday mid-day and weekday PM peak hours, the worst approach operates at LOS B without the Project and operates at LOS F with the Project. Signal warrants are met.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps – In all but the AM peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp – In the Saturday mid-day peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S) – – In the Saturday mid-day peak hour, the intersection operates at LOS B without the Project and operates at LOS F with the Project.
- Intersection #21: Admiral Callaghan Lane/ Southern Project Driveway – In the weekday mid-day and weekday PM peak hours, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway – In the weekday PM peak hour, the intersection operates at unacceptable LOS F with the Project.
- Intersection #23: Admiral Callaghan Lane/ Northern Project Driveway – In all but the AM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

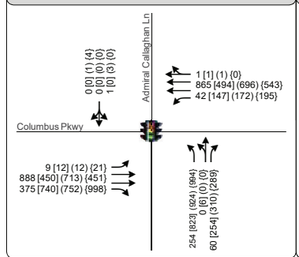
Existing Costco Site

Study Intersection

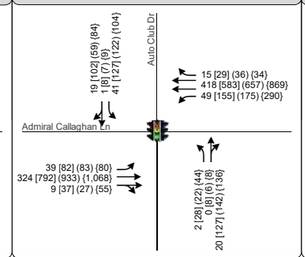
Project Access Intersection

Future Intersection

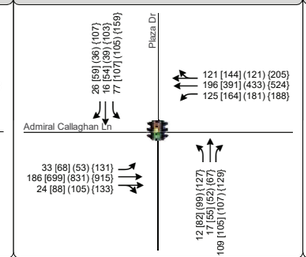
1. Admiral Callaghan Ln/Columbus Pkwy



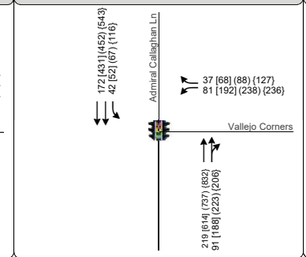
2. Auto Club Dr/Admiral Callaghan Ln



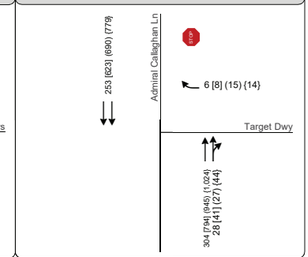
3. Plaza Dr/Admiral Callaghan Ln



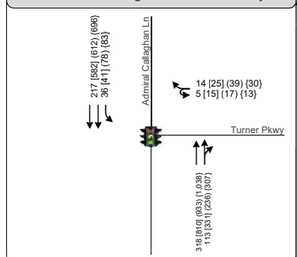
4. Admiral Callaghan Ln/Vallejo Corners



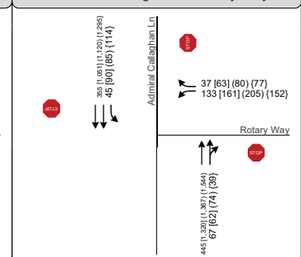
5. Admiral Callaghan Ln/Target Driveway



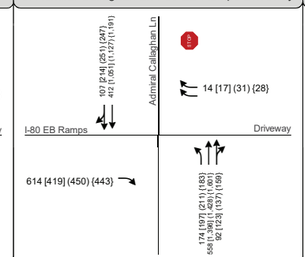
6. Admiral Callaghan Ln/Turner Pkwy



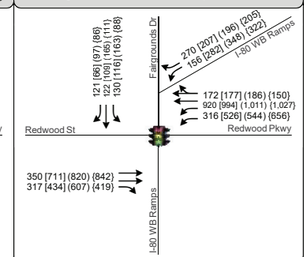
7. Admiral Callaghan Ln/Rotary Way



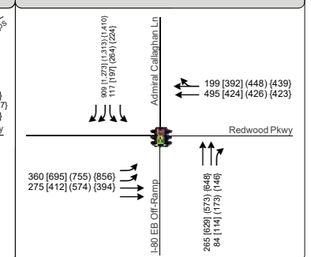
8. Admiral Callaghan Ln/I-80 EB Ramps/Driveway



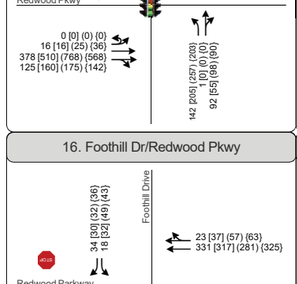
9. Fairgrounds Dr/I-80 WB Ramps/Redwood St



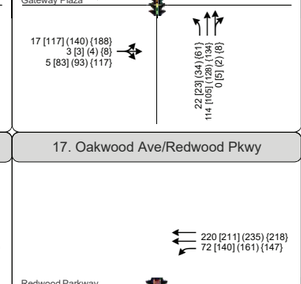
10. Admiral Callaghan Ln/I-80 EB Off-Ramp/Redwood Pkwy



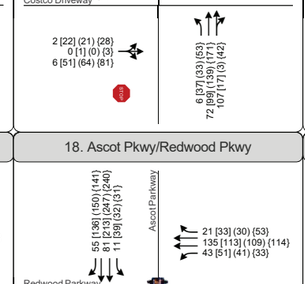
11. Admiral Callaghan Ln/Redwood Pkwy



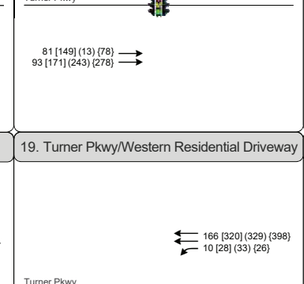
12. Plaza Dr/Gateway Plaza



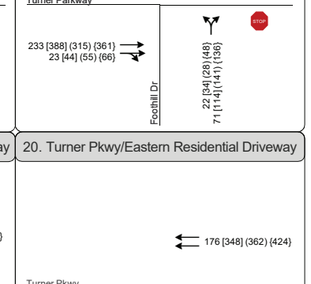
13. Plaza Dr/Costco Driveway



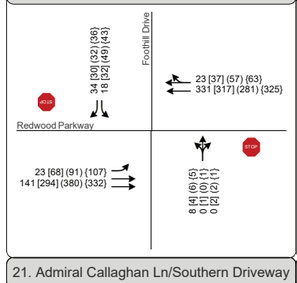
14. Plaza Dr/Turner Pkwy



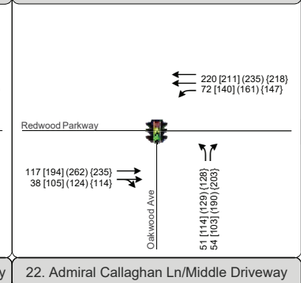
15. Turner Pkwy/Foothill Dr



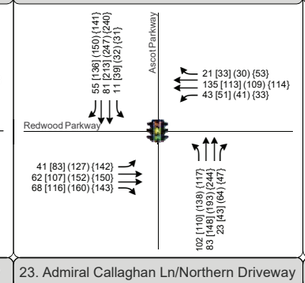
16. Foothill Dr/Redwood Pkwy



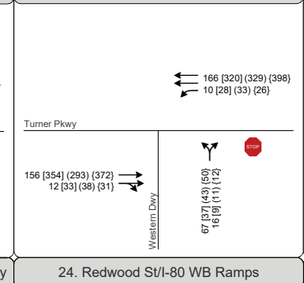
17. Oakwood Ave/Redwood Pkwy



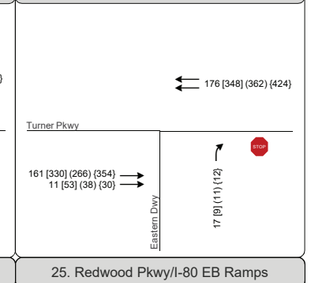
18. Ascot Pkwy/Redwood Pkwy



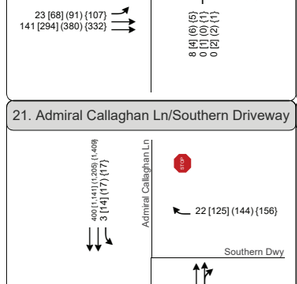
19. Turner Pkwy/Western Residential Driveway



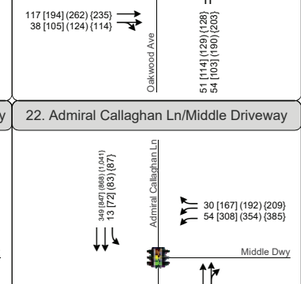
20. Turner Pkwy/Eastern Residential Driveway



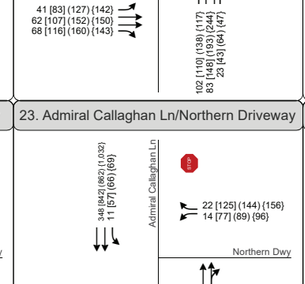
21. Admiral Callaghan Ln/Southern Driveway



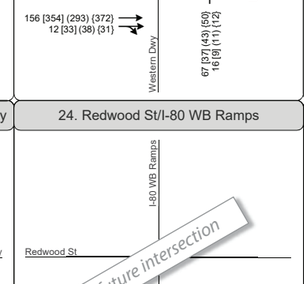
22. Admiral Callaghan Ln/Middle Driveway



23. Admiral Callaghan Ln/Northern Driveway



24. Redwood St/I-80 WB Ramps



25. Redwood Pkwy/I-80 EB Ramps

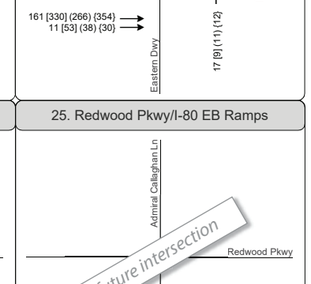


Figure 8

Existing with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Table 6: Intersection Levels of Service — Existing with Project Conditions

Location	Control[1, 2]	Peak Hour	Existing Conditions[3]		Existing with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
1. Admiral Callaghan Lane/Columbus Parkway	Signal	AM	13.8	B	11.6	B
		MD	17.2	B	16.9	B
		PM	24.0	C	24.7	C
		SA	20.4	C	20.3	C
2. Admiral Callaghan Lane/Auto Club Drive	Signal	AM	14.6	B	13.5	B
		MD	15.1	B	15.4	B
		PM	15.8	B	16.4	B
		SA	17.3	B	18.5	B
3. Admiral Callaghan Lane/Plaza Drive	Signal	AM	25.6	C	23.5	C
		MD	21.8	C	23.4	C
		PM	22.8	C	17.8	B
		SA	38.1	D	24.7	C
4. Admiral Callaghan Lane/Vallejo Corners	Signal	AM	4.7	A	4.9	A
		MD	7.4	A	7.7	A
		PM	8.9	A	9.8	A
		SA	11.8	B	11.4	A
5. Admiral Callaghan Lane/Target Driveway	SSS	AM	1.0 (2.4)	A (A)	1.1 (2.6)	A (A)
		MD	1.7 (3.0)	A (A)	1.6 (4.1)	A (A)
		PM	1.9 (5.4)	A (A)	1.9 (5.1)	A (A)
		SA	2.1 (5.0)	A (A)	1.8 (5.0)	A (A)
6. Admiral Callaghan Lane/Turner Parkway	Signal	AM	6.6	A	7.8	A
		MD	13.1	B	17.7	B
		PM	15.6	B	20.8	C
		SA	23.8	C	18.0	C
7. Admiral Callaghan Lane/Rotary Way	AWS	AM	9.0	A	11.1	B
		MD	14.9	B	**156.1**	**F**
		PM	17.1	C	**153.2**	**F**
		SA	21.1	C	**103.2**	**F**
8. Admiral Callaghan Lane/I-80 EB Ramps	SSS	AM	2.1 (4.3)	A (A)	2.5 (4.5)	A (A)
		MD	5.7 (11.7)	A (B)	5.3 (12.9)	A (B)
		PM	5.7 (10.9)	A (B)	**14.5 (>180)**	**B (F)**
		SA	7.1 (13.2)	A (B)	**8.6 (54.4)**	**B (F)**
9. Redwood Street/Fairgrounds Drive/I-80 WB Ramps	Signal	AM	**95.3**	**F**	**97.3**	**F**
		MD	31.7	C	**>180**	**F**
		PM	36.2	D	**>180**	**F**
		SA	38.8	D	**>180**	**F**
10. Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp	Signal	AM	26.5	C	26.9	C
		MD	27.6	C	35.3	D
		PM	26.2	C	48.7	D
		SA	35.9	D	**150.0**	**F**

Table 6: Intersection Levels of Service — Existing with Project Conditions

Location	Control[1, 2]	Peak Hour	Existing Conditions[3]		Existing with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
11. Redwood Parkway/Admiral Callaghan Lane (S)	Signal	AM	8.9	A	9.2	A
		MD	9.9	A	12.2	B
		PM	11.9	B	25.6	C
		SA	11.5	B	**>180**	**F**
12. Plaza Drive/Gateway Plaza	Signal	AM	48.7	D	44.3	D
		MD	13.3	B	31.9	C
		PM	12.9	B	11.1	B
		SA	16.8	B	10.6	B
13. Plaza Drive/Costco Driveway	SSS	AM	5.3 (12.0)	A (B)	4.4 (10.7)	A (B)
		MD	**27.0 (97.9)**	**F (F)**	3.4 (11.0)	A (B)
		PM	**21.2 (79.5)**	**F (F)**	3.3 (12.0)	A (B)
		SA	**90.6 (> 150.0)**	**F (F)**	2.9 (12.0)	A (B)
14. Plaza Drive/Turner Parkway	Signal	AM	10.2	B	14.0	B
		MD	13.7	B	33.6	C
		PM	13.4	B	7.3	A
		SA	15.1	B	8.5	B
15. Turner Parkway/Foothill Drive	SSS	AM	2.2 (9.6)	A (A)	1.8 (10.2)	A (B)
		MD	1.9 (12.5)	A (B)	1.9 (13)	A (B)
		PM	2 (12.8)	A (B)	2 (12.2)	A (B)
		SA	2.1 (14.2)	A (B)	2.1 (13.9)	A (B)
16. Redwood Parkway/Foothill Drive	SSS	AM	1.5 (12.5)	A (B)	1.4 (12.9)	A (B)
		MD	2 (15.3)	A (C)	1.9 (18.6)	A (C)
		PM	2.4 (16.1)	A (C)	2.4 (20.5)	A (C)
		SA	2.1 (18)	A (C)	2.5 (21.6)	A (C)
17. Redwood Parkway/Oakwood Drive	Signal	AM	7.5	A	7.4	A
		MD	10.3	B	9.8	A
		PM	12.2	B	11.7	B
		SA	11.6	B	11.2	B
18. Redwood Parkway/Ascot Parkway	Signal	AM	15.6	B	15.8	B
		MD	15.8	B	17.8	B
		PM	16.6	B	18.5	B
		SA	16.2	B	17.9	B
19. Turner Parkway/Western Residential Project Driveway	Signal	AM	-	-	6.6	A
		MD			5.6	A
		PM			5.8	A
		SA			5.6	A
20. Turner Parkway/Eastern Residential Project Driveway	SSS	AM	-	-	0.4 (8.9)	A (A)
		MD			0.1 (9.5)	A (A)
		PM			0.1 (9.3)	A (A)
		SA			0.1 (9.6)	A (A)

Table 6: Intersection Levels of Service — Existing with Project Conditions

Location	Control[1, 2]	Peak Hour	Existing Conditions[3]		Existing with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
21. Admiral Callaghan Lane/Southern Project Driveway	SSS	AM MD PM SA	-	-	1.9 (4.0) **48.8 (122.6)** **54.6 (130.3)** 31.3 (48.0)	A (A) **E (F)** **F (F)** D (E)
22. Admiral Callaghan Lane/Middle Project Driveway	Signal	AM MD PM SA	-	-	2.6 69.2 **86.1** 41.3	A E **F** D
23. Admiral Callaghan Lane/Northern Project Driveway	SSS	AM MD PM SA	-	-	1.3 (6.7) **8.1 (50.8)** **20.2 (166.2)** **12.8 (85.4)**	A (A) **A (F)** **C (F)** **B (F)**
24. Redwood Parkway/I-80 Westbound Ramps (Future intersection: Cumulative (2040) cases only)	Signal	AM MD PM SA	-	-	-	-
25. Redwood Parkway/I-80 Eastbound Ramps (Future intersection: Cumulative (2040) cases only)	Signal	AM MD PM SA	-	-	-	-

Notes:
1. Signal = signalized intersection; AWS=all-way stop; SSS=side street stop
2. For side-street stop-controlled intersections, two service levels are listed: Average intersection LOS (LOS for worst side-street movement)
3. **Bold** indicates below-standard service level. Shaded indicates a significant impact.
Source: Fehr & Peers, December 2019.

Based on the above intersection analysis, including the corridor simulations of Redwood Parkway, Admiral Callaghan Lane and Turner Parkway, the roadway segments of Redwood Parkway between Fairgrounds Drive and Admiral Callaghan Lane and Admiral Callaghan Lane between Redwood Parkway and Turner Parkway would operate unacceptably under Existing With Project conditions, in one or more peak hours.

Queues

The 50th and 95th percentile vehicle queues were estimated using SimTraffic 9.0 for all controlled movements at Intersections 4 through 11, as presented in **Appendix E**.

95th percentile vehicle queues are projected to exceed the storage capacity for certain movements at the intersections listed below. Note that the 95th percentile queues are those that are projected to occur during

only 5% or less of the entire peak hour. Intersections that are not significantly impacted based on delay and LOS, as described above, are identified with an asterisk. The instance of a queue exceeding available storage is not in itself a significant impact based on the significance criteria, but rather a condition reflecting the service to individual movements at an intersection.

- Intersection #4*: Admiral Callaghan Lane/Vallejo Corners: westbound left during weekday PM, weekday mid-day and Saturday mid-day peak hours.
- Intersection #6*: Admiral Callaghan Lane/Turner Parkway: westbound left during the weekday PM and Saturday mid-day peak hours, westbound shared left/right during weekday PM, weekday mid-day and Saturday mid-day peak hours, westbound right during the Saturday mid-day peak hour.
- Intersection #7: Admiral Callaghan Lane/Rotary Way: northbound through during the weekday mid-day and weekday PM peak hours, northbound shared through/right, southbound through, and westbound right during weekday PM, weekday mid-day and Saturday mid-day peak hours, southbound left during the weekday PM and Saturday mid-day peak hours.
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps: northbound left and through during weekday PM, weekday mid-day and Saturday mid-day peak hours, northbound shared through/right during the weekday mid-day and weekday PM peak hours, southbound through during the Saturday mid-day peak hour, southbound shared through/right during the weekday PM and Saturday mid-day peak hour.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps: south westbound left during all peak hours, westbound left and westbound through during the weekday PM, weekday mid-day and Saturday mid-day peak hours, south westbound right during Saturday mid-day peak hour, southbound left in the weekday AM, weekday PM, Saturday mid-day peak hours, southbound right in the weekday PM peak hour, eastbound left in the weekday AM and weekday PM peak hour, eastbound right in the weekday PM peak hour,
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp: northbound through during the weekday PM and Saturday mid-day peak hours, westbound through and westbound through/right during the weekday AM peak hour, southbound left turn during Saturday mid-day peak hour, southbound right during all peak hours, eastbound left, and eastbound through during the weekday PM, weekday mid-day and Saturday mid-day peak hours.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S): northbound left in all peak hours, northbound shared through/right during weekday PM and Saturday mid-day peak hours, westbound through and westbound shared through/right during the weekday PM and Saturday mid-day peak hours

Signal Warrant Analysis

The unsignalized intersections of Intersection #7: Admiral Callaghan Lane/Rotary Way, Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps, Intersection #21: Admiral Callaghan Lane/Southern Project Driveway and Intersection #23: Admiral Callaghan Lane/Northern Project Driveway experience high levels of delay for vehicles turning on to Admiral Callaghan Lane. These intersections meet peak hour signal warrants during the weekday mid-day, weekday PM, and Saturday mid-day peak hours under Existing with Project conditions. Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps, Intersection #21: Admiral Callaghan Lane/Southern Project Driveway and Intersection #23: Admiral Callaghan Lane/Northern Project Driveway also meet peak hour signal warrants in the weekday AM peak hour. Intersection #7 does not meet peak hour signal warrants in the weekday AM peak hour as the retail and restaurant uses it serves are not open at that time. Intersection #7 is planned to be signalized.

The unsignalized intersections of Intersection #5: Admiral Callaghan Lane/Target Driveway. Intersection #20: Turner Parkway/Eastern Residential Project Driveway, and Intersection #13: Plaza Drive/Costco Driveway do not meet peak hour signal warrants in any of the peak hours studied.

Refer to the Signal Warrant section in Chapter 2 for a discussion of how the peak hour volume signal warrant relates to the process of considering whether to install a new traffic signal.

Impacts and Mitigations

Impact TRA-1: **The implementation of the Project under Existing With Project conditions is projected to significantly impact seven intersections during peak hours. This is a significant impact.**

The Project would significantly impact the following intersections in one or more of the peak hours studied:

- Intersection #7: Admiral Callaghan Lane/Rotary Way – In all but the AM peak hour, the worst approach operates at LOS B without the Project and the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F with the Project. As noted above, this intersection was analyzed as an all-way stop because that was the control type in 2017, but the intersection has since had a signal installed.
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps – In the Saturday mid-day and weekday PM peak hours, the worst approach operates at LOS B without the Project and operates at LOS F with the Project. Signal warrants are met.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps – In all but the AM peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.

- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp – In the Saturday mid-day peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S) – – In the Saturday mid-day peak hour, the intersection operates at LOS B without the Project and operates at LOS F with the Project.
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway – In the weekday mid-day and weekday PM peak hours, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway – In the weekday PM peak hour, the intersection operates at unacceptable LOS F with the Project.
- Intersection #23: Admiral Callaghan Lane/ Northern Project Driveway – In all but the AM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.

Mitigation Measure TRA -1 below was developed to mitigate the projected congestion in the impact area. It is noted that while intersection #6, Admiral Callaghan Lane/Turner Parkway, is not significantly impacted under Existing With Project conditions, the recommended capacity improvement at this intersection mitigates traffic impacts at the intersections to the south.

Mitigation Measure TRA-1:

- Intersection #6: Admiral Callaghan Lane/Turner Parkway – Add a northbound right turn pocket lane and modify the geometry of the westbound approach to provide one right turn lane, one left turn lane and one left turn pocket.
- Initial Signal Timing Study – Prior to the issuance of Occupancy Permits, the City shall initiate a signal timing study for the proposed traffic signal and the existing traffic signals. The timing study shall include the same traffic signals included in the Transportation Impact Analysis prepared for the project. This study is to assist the City in optimizing traffic flow in the project vicinity and provide a baseline for a post occupancy signal coordination study.
- Include a signal interconnect for the new signal at intersection #22 (Admiral Callaghan Lane/Middle Project Driveway), to allow coordination between this new signal and the other signals along Admiral Callaghan Lane.
- Post Costco Occupancy Signal Coordination Study – Within 3 months of occupancy of the Costco store (or as adjusted by the Public Works Director), the applicant shall fund and prepare, to the satisfaction of the Public Works Director, a signal timing and coordination study to confirm the EIR's

traffic analysis and further optimize traffic flow in the project vicinity. The study shall include the same intersections noted in the Transportation Impact Analysis, so that refined signal timings and coordination based on actual traffic volumes and observed conditions can be implemented if necessary. Upon the Public Works Director's approval of the study, the City shall update signal timing based on the results of this study, if necessary.

While this mitigation would improve traffic flow and reduce delays in the impact area, the impacts would remain significant and unavoidable in one or more peak hours studied, for all intersections except intersection #8. Note that this finding is based on the operations results for the Cumulative With Project (Mitigated) case, and the comparable congestion between the Existing With Project and Cumulative With Project cases. No other feasible mitigation measures have been identified which would further mitigate the impacts. Insufficient right-of-way exists to add capacity to the City of Vallejo intersections which are significantly impacted. Caltrans has prepared an interchange improvement plan for the I-80/Redwood Parkway interchange which will improve operations at the I-80 ramp intersections; however, this Caltrans project is not yet fully funded and cannot be considered feasible mitigation for the Existing With Project impacts at those intersections.

It is noted that peak hour signal warrants are met at intersection #7 under both Existing and Existing With Project conditions, and the intersection was signalized in 2019 (the Existing and Existing With Project analyses assumed the all-way stop control that was in place when most of the counts were taken in 2017). The intersection is projected to operate acceptably with signalization in the weekday AM, mid-day and PM peak hours. In the Saturday mid-day peak hour, the intersection is projected to operate with less delay with signalization, but still at an unacceptable level of service.

Mitigated level of service results for all impacted intersections under Cumulative With Project conditions are presented in **Table 11** in Chapter 6.

Project Traffic on Foothill Drive

Based on an evaluation of the travel times between the Project site and the various trip distribution origins and destinations (refer to Figure 4), it was determined that few if any commercial project trips with origins or destinations to the south or east would use Foothill Drive to travel to or from the project site. This is due to several factors, including (1) the longer travel time for routes using Foothill Drive, resulting from the travel path lengths and the speed limits on Foothill Drive (25 mph on Foothill Drive versus 40 mph on Turner Parkway and Ascot Parkway, and 35 mph on Redwood Parkway and Admiral Callaghan Lane); (2) signal-related delays on westbound Redwood Parkway at Admiral Callaghan Lane which would discourage outbound commercial project trips destined for points south from travelling out-of-path to use Foothill as a bypass of Admiral Callaghan congestion; and (3) signal-related delays on westbound Turner Parkway at

Admiral Callaghan Lane and on southbound Admiral Callaghan Lane at the middle project driveway which would discourage inbound commercial project trips from using Foothill as an alternative to northbound Admiral Callaghan Lane.

The residential project trips would be similarly discouraged from using Foothill Drive due to the speed limit and Redwood Parkway signal delay considerations. However, due to the residential project driveways' proximity to Foothill Drive, it is possible that some residential project trips may choose to use Foothill Drive to travel to and from the east, even though the estimated travel time between the residential project driveways and the intersection of Redwood Street/Ascot Parkway is longer using the Foothill-Redwood route than the Turner – Ascot route. Given the estimated 30 percent distribution of project trips to and from the east, and the expected small number of these trips that would choose Foothill Drive, it was determined that the project trip assignment to Foothill Drive is expected to be negligible, less than 20 trips in any peak hour. Twenty or fewer trips on Foothill Drive trips would constitute an increase in peak hour volumes of 11% to 21% relative to existing condition volumes, and 10% to 17% relative to cumulative condition volumes. This would result in a maximum of one additional trip every three minutes on Foothill Drive in the peak hours, and would therefore not be expected to cause a noticeable change in the traffic flow or operations of the roadway.

Project Gas Station Vehicle Queuing

The Project's Costco gas station will provide 30 fueling stations in ten feeder lanes, with a bypass lane available for each feeder lane (most of the bypass lanes will be shared between two feeder lanes). The existing Vallejo Costco gas station provides 16 fueling stations in eight feeder lanes. Both the existing and proposed gas stations provide vehicle queuing space of about three vehicles per feeder lane, plus space for a single entry queue for vehicles to select the shortest lane as they enter the site.

The existing Vallejo Costco gas station was observed during the weekday AM and PM peak periods in July 2019, and was found to contain vehicle queues on-site, without spill-back to the primary entry driveway to the store. Queues varied from one to three vehicles per lane over the course of the peak hours.

The Project's gas station will be able to serve more customers per hour because of an increase from 16 to 30 gas dispensers, resulting in potentially shorter queues than observed at the existing gas station. Further, as noted in the memorandum provided by Kittelson & Associates describing the change in transactions related to store size increases and gas station additions, included in Appendix F, the increase in transactions is generally commensurate with the store size increase, with a relatively small difference related to the addition of gas dispensers. For these reasons, it is expected that gas station queues at the Project site will be contained within the feeder lanes and gas station site.

Freeway Analysis

For freeway mainline segments, level of service (LOS) is a function of traffic density and describes the resulting delay experienced by people driving. LOS scores are compared to the minimum operating standards defined by Caltrans in **Table 7** below. With the addition of Project traffic, all freeway segments experience an increase in density, however all of the analysis segments operate at or above the minimum level of service standards for highway facilities set by Caltrans, LOS E or better.

Table 7: Weekday PM Freeway Analysis — Existing with Project Conditions

Segment	Existing Conditions			Existing with Project Conditions		
	Volume	Density	LOS	Volume	Delay	LOS
1. West Bound – East of Columbus Parkway	3,520	16.4	B	3,552	16.6	B
2. Westbound – Redwood Parkway/Columbus Parkway	4,510	21.6	C	4,668	22.4	C
3. Westbound – West of Redwood Parkway	4,690	31.0	D	4,786	31.6	D
4. Eastbound – East of Columbus Parkway	4,890	29.9	D	4,918	30.2	D
5. Eastbound – Redwood Parkway/Columbus Parkway	2,980	18.9	C	3,154	20.0	C
6. Eastbound – West of Redwood	5,240	35.0	D	5,352	36.0	E

[1] Density Reported in Passenger Cars per Mile Per Lane

Source: Fehr & Peers, December 2019.

CHAPTER 5 – NEAR-TERM CONDITIONS

This chapter discusses Near-Term (2023) traffic conditions both without and with the Project.

Traffic Volumes

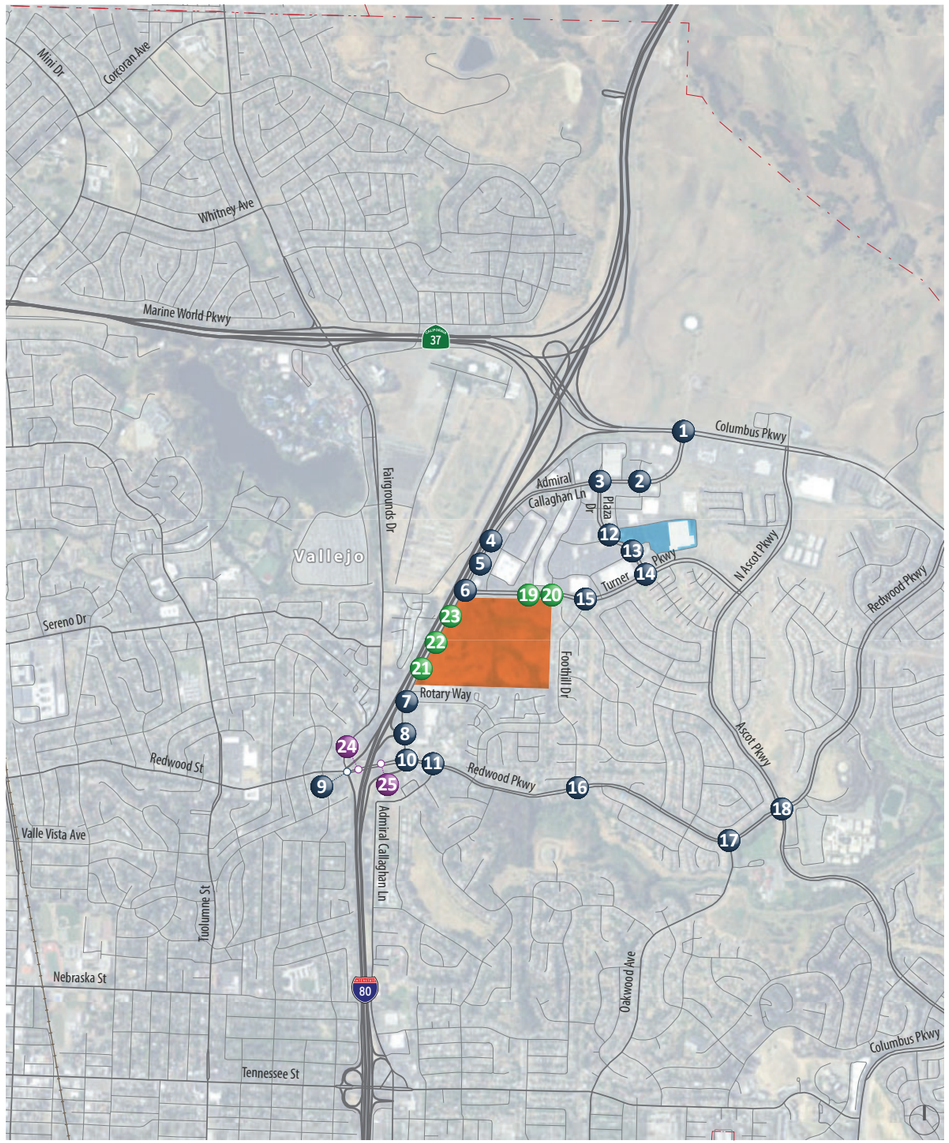
Published forecasts from the February 2016 In-N-Out study, the Vallejo General Plan EIR, and the March 2015 Chick-Fil-A study were used to develop and validate background traffic growth rates for Near-Term conditions. Based on these reviews, the existing traffic counts were increased by six percent (one percent annual growth) to account for traffic growth from projects outside the immediate study area that could add through traffic to the area. In addition, the In-N-Out project traffic was directly assigned to the study area network, using the trip assignment in the In-N-Out traffic study. The resulting Near-Term No Project traffic volumes are shown on **Figure 9.**

The removal of the existing Costco site traffic and addition of the new Project trips (Figure 5 and Figure 6) were added to the Near-Term No Project peak hour traffic volumes to estimate the Near-Term With Project peak hour traffic volumes, shown in **Figure 10.**

Roadway Network

Under Near-Term Conditions, the only improvement assumed to the roadway network is the installation of a new signal at the intersection of Admiral Callaghan Lane and Rotary Way.

Under Near-Term with Project Conditions, Admiral Callaghan was assumed to be widened to two lanes in each direction along the Project frontage.



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

Project Access Intersection

Future Intersection

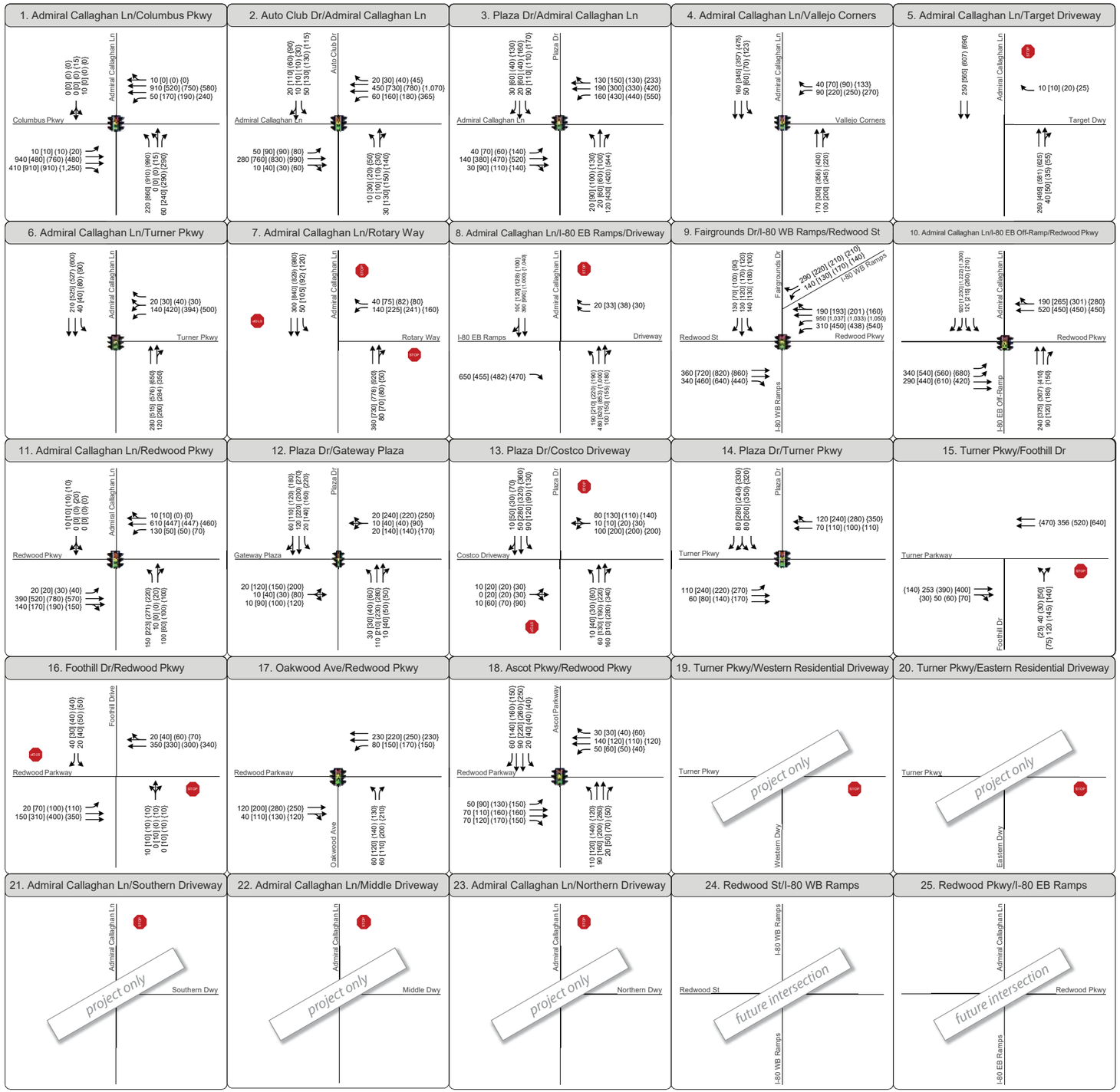
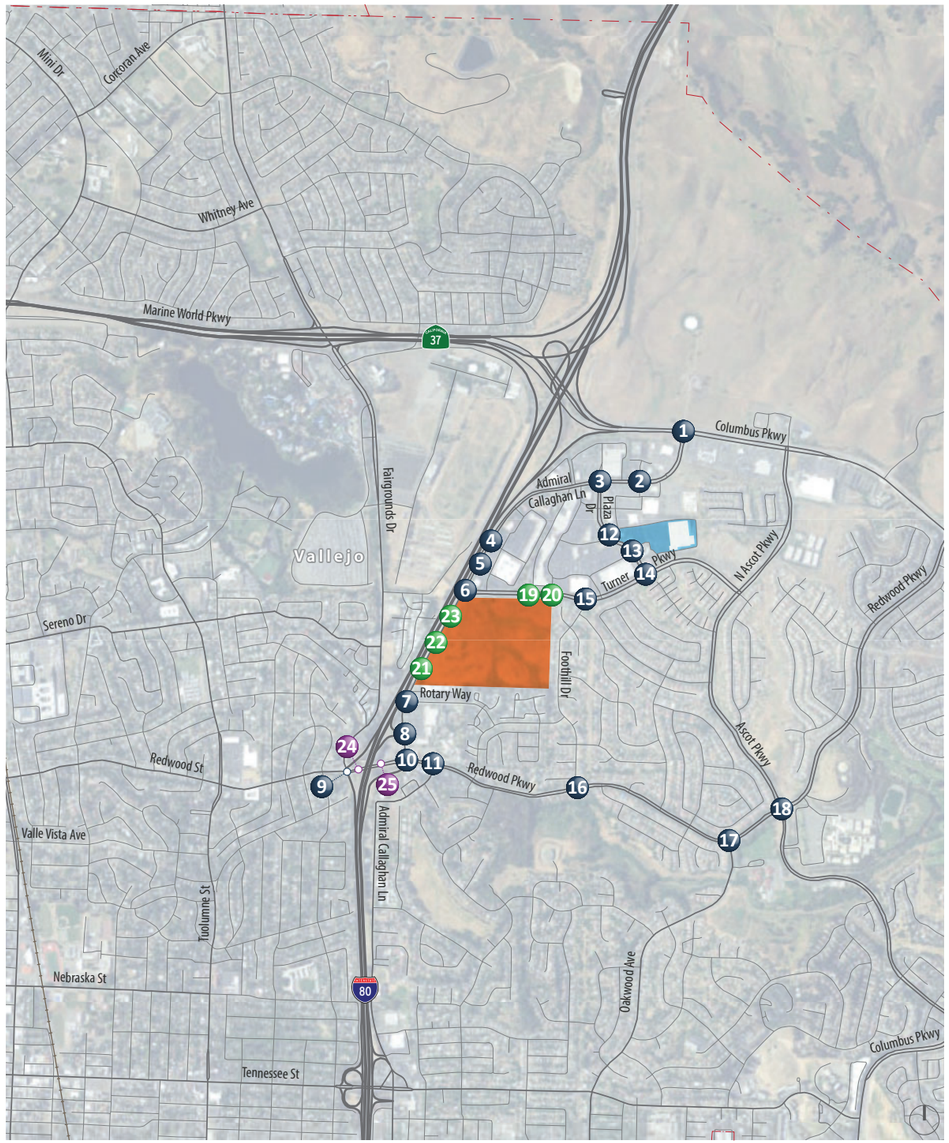


Figure 9

Near-Term No Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes

Signalized Intersection

Stop Sign

Project Site

Existing Costco Site

Study Intersection

Project Access Intersection

Future Intersection

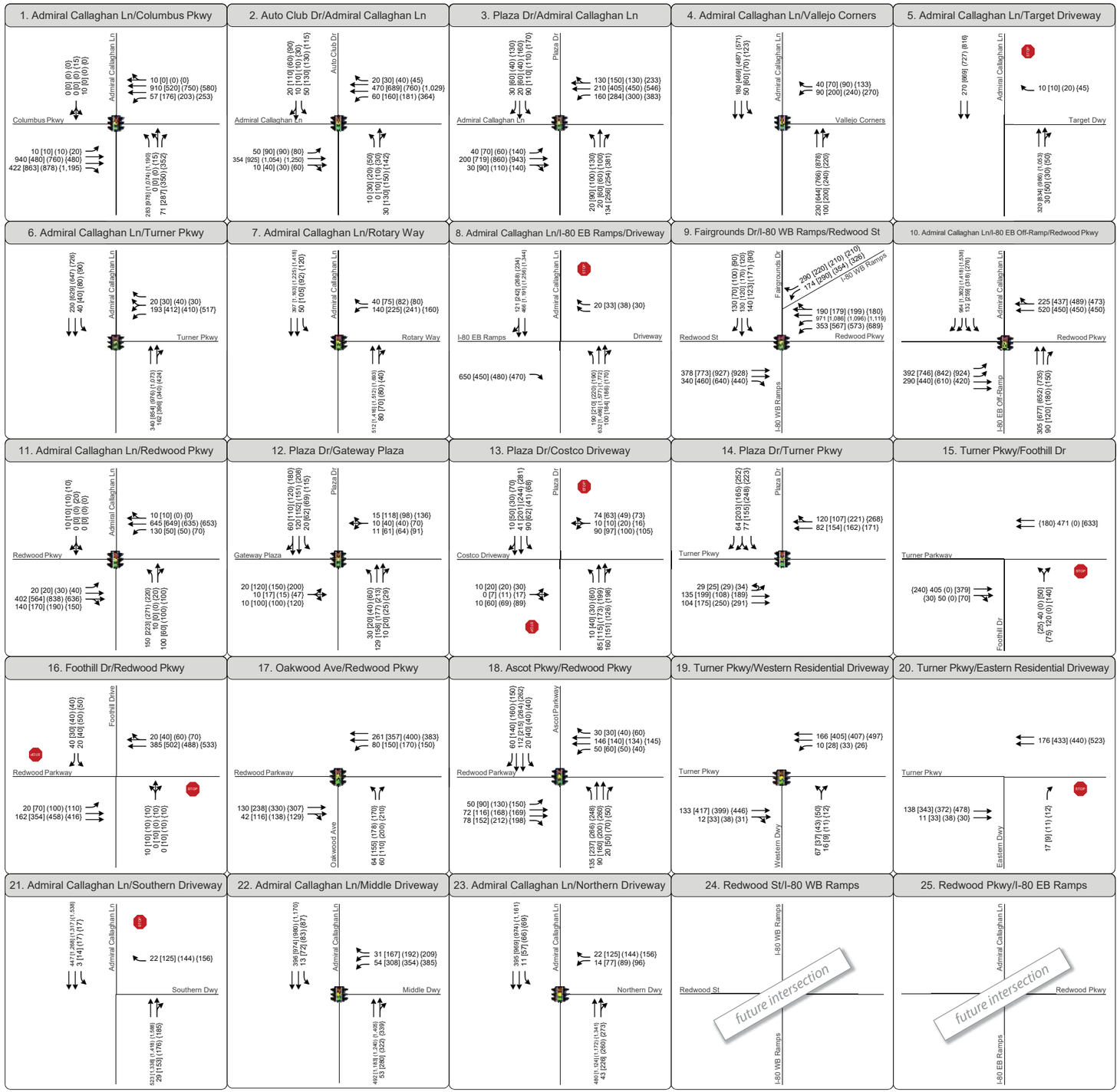


Figure 10

Near-Term with Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Intersection Analysis

Peak hour intersection operations for the Near-Term No Project and Near-Term With Project cases are shown in **Table 8.** The following intersections are projected to operate deficiently in at least one peak hour:

- Intersection #7: Admiral Callaghan Lane/Rotary Way
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S)
- Intersection #13: Plaza Drive/Costco Driveway
- Intersection #23: Admiral Callaghan Lane/ Northern Project Driveway

At intersection #13 the peak hour signal warrants are met under Near-Term No Project conditions during the weekday mi-day, weekday PM, and Saturday mid-day peak hours , and with the replacement of the existing Costco is replaced with lower trip generating retail signal warrants are not met under Near-Term With Project conditions. At intersections #19 and #20 the peak hour signal warrants are not met under Near-Term With Project conditions. At intersections #21 and #23 the peak hour signal warrants are met under Near-Term With Project conditions during the weekday mid-day, weekday PM, and Saturday mid-day peak hours. However, as described in Chapter 3, these two project driveways are not proposed to be signalized.

Based on the significance thresholds presented in Section 2, the following four intersections are significantly impacted in the Near-Term With Project case:

- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps – In all but the AM peak hour, the intersection operates at LOS D without the Project and operates at LOS F with the Project.
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp – In all but the AM peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S) – In all but the AM peak hour, the intersection operates at LOS B without the Project and operates at LOS F with the Project.
- Intersection #23: Northern Project Driveway/Admiral Callaghan Lane - In the weekday PM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.

Table 8: Intersection Levels of Service — Near-Term with Project Conditions

Location	Control[1, 2]	Peak Hour	Near-Term Conditions[3]		Near-Term with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
1. Admiral Callaghan Lane/Columbus Parkway	Signal	AM	18.6	B	17.7	B
		MD	18.5	B	19.7	B
		PM	21.8	B	25.2	C
		SA	28.4	C	39.2	D
2. Admiral Callaghan Lane/Auto Club Drive	Signal	AM	16.1	B	15.0	B
		MD	15.7	B	16.0	B
		PM	16.6	B	17.4	B
		SA	22.5	C	30.0	C
3. Admiral Callaghan Lane/Plaza Drive	Signal	AM	20.3	C	19.0	B
		MD	29.9	C	22.0	C
		PM	35.7	D	25.1	C
		SA	65.3	E	41.4	D
4. Admiral Callaghan Lane/Vallejo Corners	Signal	AM	5.3	A	4.9	A
		MD	8.0	A	10.9	B
		PM	9.3	A	9.4	A
		SA	62.9	E	11.5	B
5. Admiral Callaghan Lane/Target Driveway	SSS	AM	1.1 (2.8)	A (A)	1.2 (2.8)	A (A)
		MD	1.6 (3.8)	A (A)	3.5 (4.8)	A (A)
		PM	1.7 (4.6)	A (A)	1.7 (5.4)	A (A)
		SA	**28.3 (>180)**	**D (F)**	2.0 (4.9)	A (A)
6. Admiral Callaghan Lane/Turner Parkway	Signal	AM	6.9	A	8.9	A
		MD	13.3	B	25.2	C
		PM	16.2	B	19.5	B
		SA	38.6	D	20.7	C
7. Admiral Callaghan Lane/Rotary Way	Signal	AM	9.3	A	8.0	A
		MD	**92.8**	**F**	30.9	D
		PM	**76.4**	**F**	21.4	C
		SA	21.8	C	69.7	E
8. Admiral Callaghan Lane/I-80 EB Ramps	SSS	AM	2.3 (4.7)	A (A)	2.4 (6.1)	A (A)
		MD	7.7 (15.1)	A (C)	17.4 (42.4)	C (E)
		PM	9.1 (19.6)	A (C)	16.9 (60.8)	B (E)
		SA	6.3 (11.6)	A (B)	16.8 (35.3)	C (E)
9. Redwood Street/Fairgrounds Drive/I-80 WB Ramps	Signal	AM	**96.8**	**F**	**91.0**	**F**
		MD	37.3	D	**>180**	**F**
		PM	53.6	D	**>180**	**F**
		SA	53.9	D	**>180**	**F**
10. Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp	Signal	AM	10.1	B	28	C
		MD	33.5	C	**>180**	**F**
		PM	34.7	C	**>180**	**F**
		SA	41.3	D	**>180**	**F**

Table 8: Intersection Levels of Service — Near-Term with Project Conditions

Location	Control[1, 2]	Peak Hour	Near-Term Conditions[3]		Near-Term with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
11. Redwood Parkway/Admiral Callaghan Lane (S)	Signal	AM	10.1	B	10.1	B
		MD	11.1	B	**>180**	**F**
		PM	16.9	B	**>180**	**F**
		SA	13.7	B	**>180**	**F**
12. Plaza Drive/Gateway Plaza	Signal	AM	52.7	D	51.3	D
		MD	12.9	B	23.6	C
		PM	13.1	B	10.6	B
		SA	19.5	B	12.5	B
13. Plaza Drive/Costco Driveway	SSS	AM	5.9 (13.2)	A (B)	5.6 (13.2)	A (B)
		MD	**34.3 (128.9)**	**D (F)**	5.3 (16.5)	A (C)
		PM	**33.2 (130)**	**D (F)**	5.3 (18.1)	A (C)
		SA	**131 (>180)**	**F (F)**	8.2 (33.5)	A (D)
14. Plaza Drive/Turner Parkway	Signal	AM	10.4	B	35.3	D
		MD	14.2	B	66.3	E
		PM	13.9	B	21.4	C
		SA	16.0	B	62.2	E
15. Turner Parkway/Foothill Drive	SSS	AM	2.2 (9.8)	A (A)	1.9 (10.4)	A (B)
		MD	2 (13.8)	A (B)	2 (13.8)	A (B)
		PM	2 (13.3)	A (B)	2 (12.7)	A (B)
		SA	2.2 (14.8)	A (B)	2.2 (14.5)	A (B)
16. Redwood Parkway/Foothill Drive	SSS	AM	1.7 (13.1)	A (B)	1.6 (13.6)	A (B)
		MD	2.7 (17.3)	A (C)	2.8 (24)	A (C)
		PM	2.7 (16.2)	A (C)	2.7 (22.6)	A (C)
		SA	3.3 (19.1)	A (C)	3.6 (29.3)	A (C)
17. Redwood Parkway/Oakwood Drive	Signal	AM	7.8	A	7.6	A
		MD	10.8	A	10.5	A
		PM	12.5	B	12.3	B
		SA	11.9	B	11.8	B
18. Redwood Parkway/Ascot Parkway	Signal	AM	15.4	B	15.8	B
		MD	16.1	B	18.0	B
		PM	16.9	B	19.1	B
		SA	16.6	B	18.6	B
19. Turner Parkway/Western Residential Project Driveway	Signal	AM	-	-	6.6	A
		MD			5.4	A
		PM			5.6	A
		SA			5.5	A
20. Turner Parkway/Eastern Residential Project Driveway	SSS	AM	-	-	0.4 (8.8)	A (A)
		MD			0.1 (9.8)	A (A)
		PM			0.1 (9.7)	A (A)
		SA			0.1 (10.1)	A (B)

Table 8: Intersection Levels of Service — Near-Term with Project Conditions

Location	Control[1, 2]	Peak Hour	Near-Term Conditions[3]		Near-Term with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
21. Admiral Callaghan Lane/Southern Project Driveway	SSS	AM MD PM SA	-	-	1.4 (3.8) 7.0 (9.0) 3.8 (9.0) 21.6 (29.0)	A (A) A (A) A (A) C (D)
22. Admiral Callaghan Lane/Middle Project Driveway	Signal	AM MD PM SA	-	-	3.1 15.7 11.2 29.5	A B B C
23. Admiral Callaghan Lane/Northern Project Driveway	SSS	AM MD PM SA	-	-	1.4 (7.2) 9.7 (49.6) **10.6 (73.7)** 6.9 (38.8)	A (A) A (E) **A (F)** A (E)
24. Redwood Parkway/I-80 Westbound Ramps (Future intersection: Cumulative (2040) cases only)	Signal	AM MD PM SA	-	-	-	-
25. Redwood Parkway/I-80 Eastbound Ramps (Future intersection: Cumulative (2040) cases only)	Signal	AM MD PM SA	-	-	-	-

Notes:
1. Signal = signalized intersection; AWS=all-way stop; SSS=side street stop
2. For side-street stop-controlled intersections, two service levels are listed: Average intersection LOS (LOS for worst side-street movement)
3. **Bold** indicates below-standard service level. Shaded indicates a significant impact.
Source: Fehr & Peers, December 2019.

Based on the above intersection analysis, including the corridor simulations of Redwood Parkway, Admiral Callaghan Lane and Turner Parkway, the roadway segments of Redwood Parkway between Fairgrounds Drive and Admiral Callaghan Lane and Admiral Callaghan Lane between Redwood Parkway and Turner Parkway would operate unacceptably under Near-Term With Project conditions.

Queues

The 50th and 95th percentile vehicle queues were estimated using SimTraffic 9.0 for all controlled movements at Intersections 4 through 11, as presented in **Appendix E.**

Under Near-Term Without Project conditions, 95th percentile vehicle queues are projected to exceed the storage capacity for certain movements at the intersections listed below. Note that the 95th percentile queues are those that are projected to occur during only 5% or less of the entire peak hour.

- Intersection #7: Admiral Callaghan Lane/Rotary Way: northbound through and northbound through/right during the weekday AM peak hour, westbound right turn during all peak hours.
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps: northbound left during the weekday AM, weekday mid-day, and Saturday mid-day peak hours, northbound through and northbound through/right during the weekday AM peak hour.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps: eastbound right during the weekday PM, weekday mid-day and Saturday mid-day peak hours, westbound through/right during the weekday AM peak hour, south westbound left, southbound right and southbound left during all peak hours.
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp: eastbound left and eastbound through in the weekday AM peak hour, southbound right during all peak hours.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S): northbound left turn during all peak hours.

Under Near-Term With Project conditions, 95th percentile vehicle queues are projected to exceed the storage capacity for certain movements at the intersections listed below. Intersections that are not significantly impacted based on delay and LOS, as described above, are identified with an asterisk. The instance of a queue exceeding available storage is not in itself a significant impact based on the significance criteria, but rather a condition reflecting the service to individual movements at an intersection.

- Intersection #4*: Admiral Callaghan Lane/Vallejo Corners: westbound left during the weekday mid-day, weekday PM, and Saturday mid-day peak hours.
- Intersection #7*: Admiral Callaghan Lane/Rotary Way: northbound shared through/right during the weekday AM and weekday mid-day peak hour, southbound left during the Saturday mid-day peak hour, southbound through and westbound right during all three peak hours.
- Intersection #8*: Admiral Callaghan Lane/I-80 EB Ramps: northbound left turn and northbound through during all peak hours, northbound shared through/right during the weekday AM and weekday mid-day peak hours, southbound through and shared through/right during Saturday mid-day peak hour.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps: eastbound through and eastbound shared left/through during the weekday mid-day, weekday PM and Saturday mid-day peak hours, westbound left, and southbound left during all peak hours, westbound through

during the weekday AM and Saturday mid-day peak period, south westbound left during the weekday AM, weekday mid-day, and weekday PM peak hours, south westbound right and southbound through during the weekday PM and Saturday mid-day peak hours

- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp: northbound through and northbound right during the weekday mid-day, weekday PM and Saturday mid-day peak hours, eastbound left, and southbound right during all peak hours, southbound left during the Saturday mid-day peak hours, eastbound through during the weekday AM, weekday PM and Saturday mid-day peak period
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S): northbound left during all peak hours, northbound shared through/right, westbound through, and westbound shared through/right during all peak hours, southbound left/through/right during the Saturday mid-day peak hour

Signal Warrant Analysis

The unsignalized intersection of Intersection #8: Admiral Callaghan Lane/I-80 Ramps experiences high volumes and high levels of delay for vehicles turning on to Admiral Callaghan Lane. The intersection meets peak hour signal warrants during all peak hours studied under Near-Term and Near-Term with Project conditions. The unsignalized intersection of Intersection #13: Plaza Drive/Costco Driveway meets peak hour signal warrants under Near-Term conditions during the weekday mid-day, weekday PM, and Saturday mid-day peak hours but does not meet signal warrants under Near-Term with Project conditions, due to reduction in trips under this scenario as the existing Costco is replaced with lower trip generating retail. Intersection #13 does not meet peak hour signal warrants in the weekday AM peak hour under Near-Term and Near-Term with Project conditions. The unsignalized intersection of Intersection #5: Admiral Callaghan Lane/Target Driveway does not meet peak hour signal warrants in any of the peak hours studied under Near-Term and Near-Term with Project conditions.

The unsignalized intersection of Intersection #20: Turner Parkway/Eastern Residential Project Driveway does not meet signal warrants in any of the peak hours studied under Near-Term with Project conditions. Intersection #23: Admiral Callaghan Lane/Northern Project Driveway and Intersection #21: Admiral Callaghan Lane/Southern Project Driveway experience high levels of delay for vehicles turning on to Admiral Callaghan Lane; these intersections meet peak hour signal warrants during all peak hours studied under Near-Term with Project conditions. Refer to the Signal Warrant section in Chapter 2 for a discussion of how the peak hour volume signal warrant relates to the process of considering whether to install a new traffic signal.

Appendix D provides the Near-Term conditions signal warrant worksheets.

Impacts and Mitigations

Impact TRA-2: **The implementation of the Project under Near-Term With Project conditions is projected to significantly impact four intersections during peak hours. This is a significant impact.**

The Project would significantly impact the following intersections in the weekday mid-day, weekday PM and/or Saturday mid-day peak hours:

- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps – In all but the AM peak hour, the intersection operates at LOS D without the Project and operates at LOS F with the Project.
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp – In all but the AM peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S) – In all but the AM peak hour, the intersection operates at LOS B without the Project and operates at LOS F with the Project.
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway - In the weekday PM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.

Mitigation Measure TRA-2:

Implement Mitigation Measure TRA-1.

With this mitigation, the impacts would remain significant and unavoidable in one or more of the peak hours studied. Note that this finding is based on the operations results for the Cumulative With Project (Mitigated) case, and the comparable congestion between the Near-Term With Project and Cumulative With Project cases. No other feasible mitigation measures have been identified which would further mitigate the impacts. Insufficient right-of-way exists to add capacity to the City of Vallejo intersections which are significantly impacted. Caltrans has prepared an interchange improvement plan for the I-80/Redwood Parkway interchange which will improve operations at the I-80 ramp intersections; however, this project is not yet fully funded and cannot be considered feasible mitigation for the Near-Term With Project impacts at those intersections.

Mitigated level of service results for all impacted intersections under Cumulative With Project conditions are presented in **Table 11** in Chapter 6.

Freeway Analysis

For freeway mainline segments, level of service (LOS) is a function of traffic density and describes the resulting delay experienced by people driving. LOS scores are compared to the minimum operating standards defined by Caltrans in **Table 9** below. With the addition of Project traffic, all freeway segments experience an increase in density, however all the analysis segments operate at or above the minimum level of service standards for highway facilities set by Caltrans, LOS E or better.

Table 9: Weekday PM Freeway Analysis — Near-Term Conditions

Segment	Near-Term Conditions			Near-Term with Project Conditions		
	Volume	Density	LOS	Volume	Delay	LOS
1. West Bound – East of Columbus Parkway	3,550	16.6	B	3,582	16.7	B
2. Westbound – Redwood Parkway/Columbus Parkway	4,650	22.3	C	4,794	23.0	C
3. Westbound – West of Redwood Parkway	4,580	30.3	D	4,676	30.9	D
4. Eastbound – East of Columbus Parkway	4,970	30.6	D	4,998	30.8	D
5. Eastbound – Redwood Parkway/Columbus Parkway	3,070	19.5	C	3,244	20.6	C
6. Eastbound – West of Redwood	5,150	33.4	D	5,262	35.2	E

[1] Density Reported in Passenger Cars per Mile Per Lane

Source: Fehr & Peers, December 2019.

CHAPTER 6 – CUMULATIVE CONDITIONS

This chapter discusses Cumulative (2040) traffic conditions both without and with the Project.

Traffic Volumes

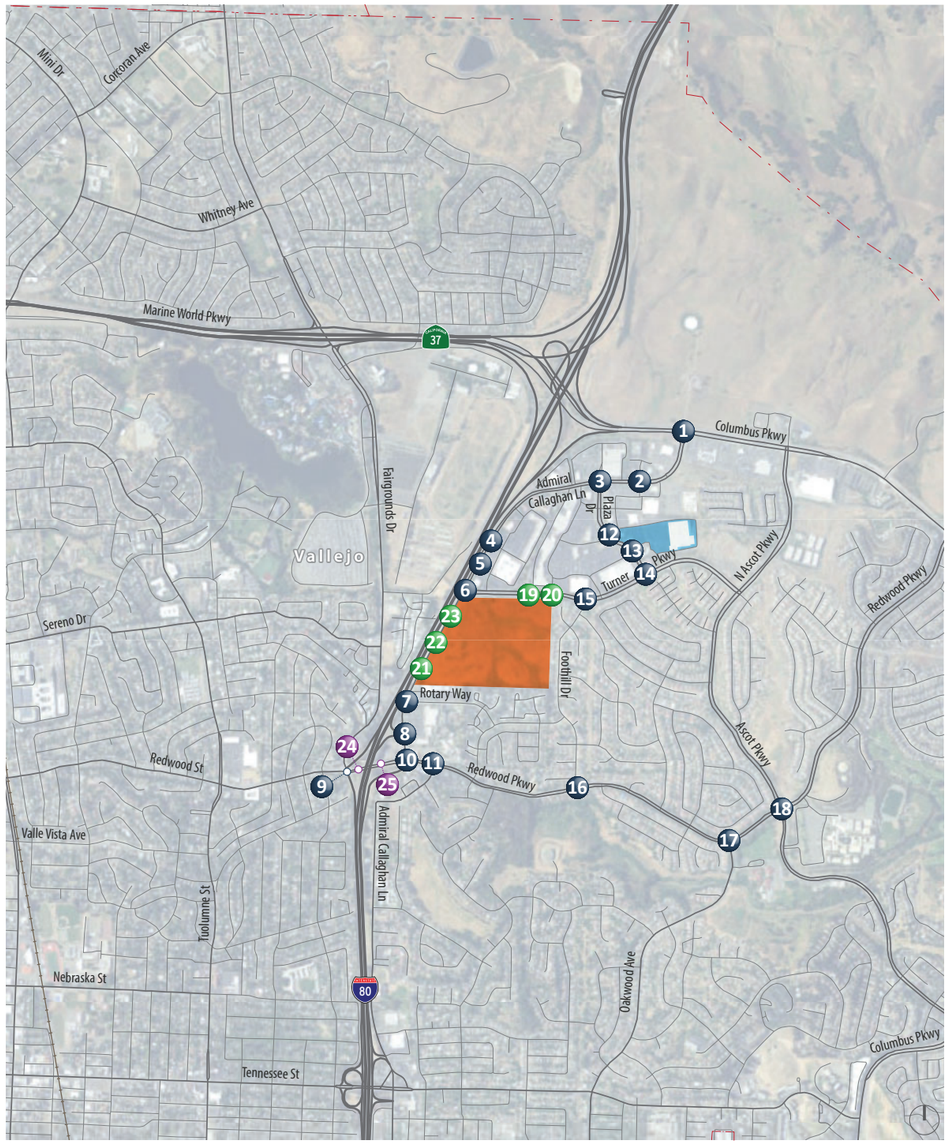
Published forecasts from the February 2016 In-N-Out study, the Vallejo General Plan EIR, and the 2015 Chick-Fil-A study were used to develop appropriate background traffic growth rates for Cumulative (2040) conditions. Based on these reviews, the existing traffic counts were increased by 23 percent (one percent annual growth) to account for traffic growth from other regional and local sources.

Under Cumulative conditions, it was assumed that the existing Costco site would be vacated by Costco but occupied by a new retail tenant. The resulting net change in trips produced by this site under Cumulative conditions are presented in Section 3. The removal of the existing Costco site trips, addition of the new retail trips on that site, and the addition of the new Project trips (Figure 5 and Figure 6) were added to the Cumulative peak hour traffic volumes, presented on **Figure 11**, to estimate the Cumulative With Project peak hour traffic volumes, shown in **Figure 12.**

Roadway Network

The planned reconfiguration of the I-80/Redwood Parkway interchange was assumed for Cumulative No Project and Cumulative With Project conditions. This reconfiguration removes the Eastbound I-80 hook ramps on Admiral Callaghan Lane, relocates Fairgrounds Drive to the west of the Westbound I-80 ramps intersection, and reconstructs the two ramp intersections, as described in *Project Report on Route 80/Redwood Parkway Interchange; Fairgrounds Drive from Redwood Street to SR 37; and SR 37/Fairgrounds Drive Interchange in the City of Vallejo (Caltrans, May 2015)* and the associated Traffic Operations Report. The new ramp intersections were assumed to be signalized, and the signals along Redwood Parkway were assumed to be coordinated. It is assumed that when the I-80/Redwood Parkway interchange is completed the City would obtain the new interchange ramp intersection signal timings from Caltrans and revise the signal timings for city intersections along Admiral Callaghan Lane to coordinate with the ramp intersection timings. This would optimize the traffic flow along Admiral Callaghan Lane and through the Redwood Parkway/I-80 interchange.

Based in City direction, the installation of a new signal at the intersection of Admiral Callaghan Lane and Rotary Way was also assumed in the Cumulative No Project and Cumulative with Project conditions. Admiral Callaghan Lane was assumed to be widened to two lanes in each direction along the Project frontage in the Cumulative With Project case, as this is a planned condition of approval for the Project.



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Existing Costco Site

(#) Study Intersection | (#) Project Access Intersection | (#) Future Intersection

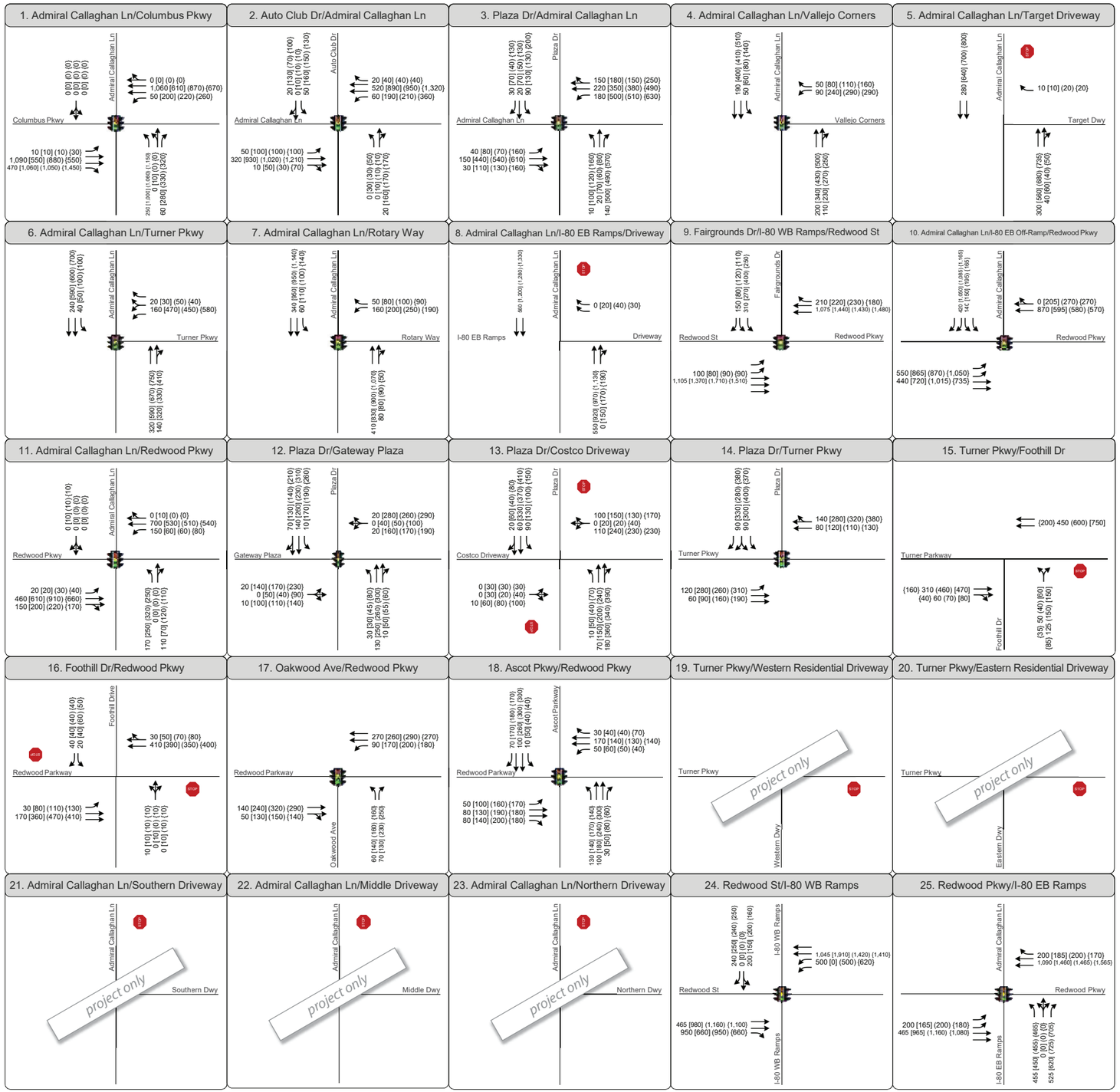
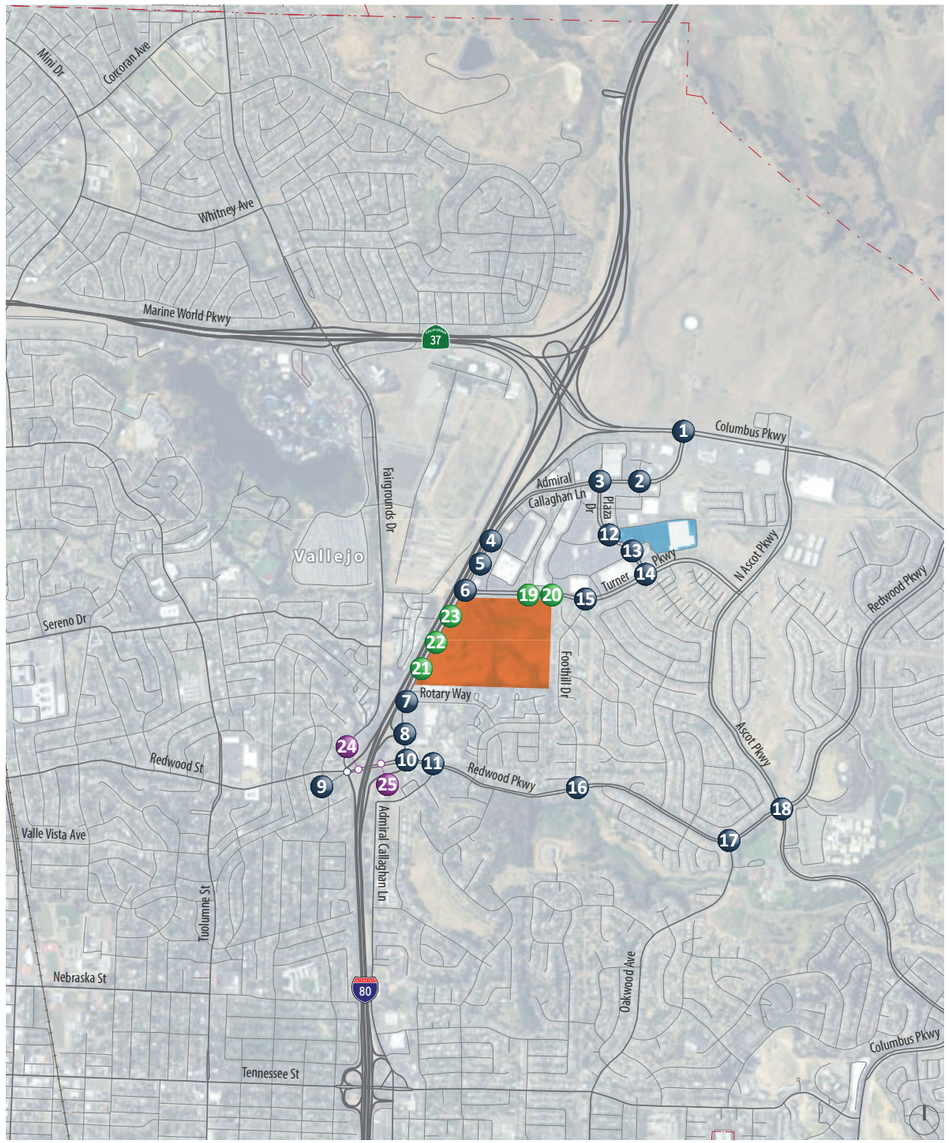


Figure 11

Cumulative No Project Peak Hour
Intersection Traffic Volumes, Lane Configurations and Traffic Controls



WW [XX] (YY) {ZZ} AM [Midday] (PM) {Saturday} Peak Hour Traffic Volumes | Signalized Intersection | Stop Sign

Project Site | Existing Costco Site

Study Intersection | Project Access Intersection | Future Intersection

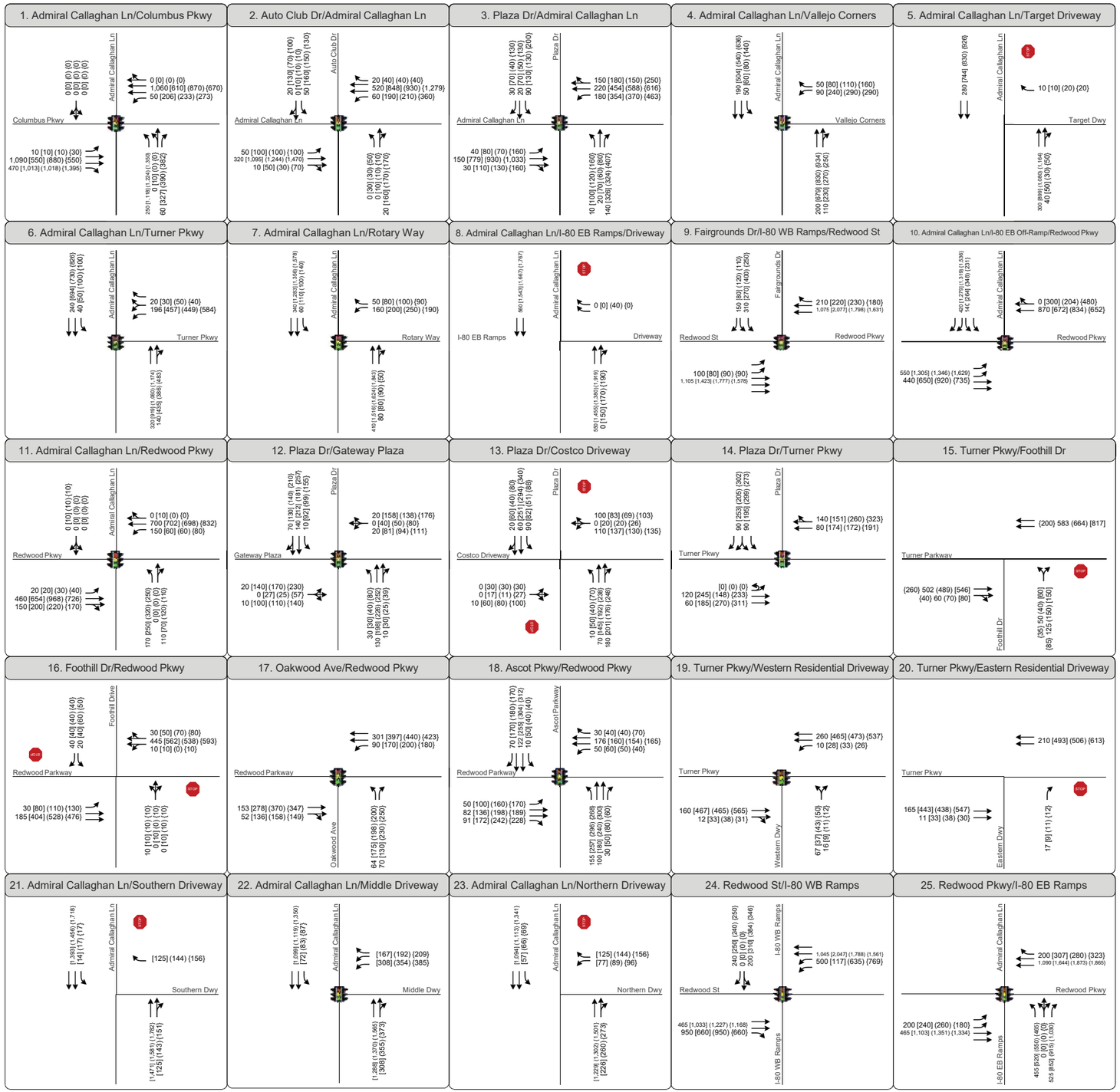


Figure 12

Cumulative with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

Intersection Analysis

Peak hour intersection operations for the Cumulative and Cumulative With Project case are shown in **Table 10.** The following intersections operate deficiently in at least one peak hour:

- Intersection #5: Admiral Callaghan Lane/Target Driveway
- Intersection #6: Admiral Callaghan Lane/Turner Parkway
- Intersection #7: Admiral Callaghan Lane/Rotary Way
- Intersection #8: Admiral Callaghan/Commercial Driveway[6]
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S)
- Intersection #13: Plaza Drive/Costco Driveway
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway
- Intersection #24: I-80 NB Ramp/Redwood Parkway

At intersection #13 the peak hour signal warrants are met under Cumulative No Project conditions during the weekday mid-day, weekday PM, and Saturday mid-day peak hours, and would continue to be met under Cumulative With Project conditions only in the Saturday mid-day peak hour. Intersection #13 does not meet peak hour signal warrants in the weekday AM peak hour under Cumulative and Cumulative with Project conditions. At intersections #5 and #8, the peak hour signal warrants are not met under Cumulative No Project nor Cumulative With Project conditions. At intersection #20, the peak hour signal warrants are not met under Cumulative With Project conditions. At intersections #21 and #23 the peak hour signal warrants are met under Cumulative With Project conditions in all three peak hours. However, as described in Chapter 3, these two project driveways are not proposed to be signalized.

Based on the significance thresholds presented in Section 2, the following eight intersections are significantly impacted in the Cumulative With Project case:

[6] This intersection currently serves the I-80 EB Ramps; with the Redwood Parkway interchange improvements assumed in the cumulative case, the ramps would be removed but the commercial driveway access on the east side of Admiral Callaghan Lane would remain.

- Intersection # 6: Admiral Callaghan Lane/Turner Parkway – In the Saturday mid-day peak hour, the intersection operates at LOS B without the Project and operates at LOS F with the Project.
- Intersection #7: Admiral Callaghan Lane/Rotary Way – In all but the AM peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps – In the weekday AM and mid-day peak hours without the Project, the intersection operates at LOS E or better and operates at LOS F with the Project. In the weekday PM and Saturday mid-day peak hours, the intersection operates at LOS F without the Project and the delay increases with the addition of Project traffic.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S) – In the AM peak hour, the intersection operates at LOS E without the Project and LOS F with the Project. In the Saturday mid-day peak hour, the intersection operates at LOS F without the Project and the delay increases with the addition of Project traffic.
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway – In all but the AM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway – In the Saturday mid-day peak hour, the intersection operates at LOS F.
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway – In all but the AM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.
- Intersection #25: I-80 NB Ramp/Redwood Parkway – In the weekday mid-day and Saturday mid-day peak hours, the intersection operates at LOS E or better without the Project and operates at LOS F with the Project.

Table 10: Intersection Levels of Service — Cumulative Conditions

Location	Control[1, 2]	Peak Hour	Cumulative Conditions[3]		Cumulative with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
1. Admiral Callaghan Lane/Columbus Parkway	Signal	AM	12.4	B	13.3	B
		MD	21.1	C	21.2	C
		PM	27.8	C	30.4	C
		SA	26.5	C	28.7	B
2. Admiral Callaghan Lane/Auto Club Drive	Signal	AM	11.7	B	7.5	A
		MD	19.3	B	19.9	B
		PM	18.8	B	20.7	C
		SA	26.4	C	36.5	D
3. Admiral Callaghan Lane/Plaza Drive	Signal	AM	21.2	C	20.3	C
		MD	29.8	C	22.7	C
		PM	38.8	D	25.9	C
		SA	60.2	E	50.3	D
4. Admiral Callaghan Lane/Vallejo Corners	Signal	AM	5.4	A	5.5	A
		MD	9.0	A	9.7	A
		PM	10.9	B	11.7	B
		SA	12.4	B	43.1	D
5. Admiral Callaghan Lane/Target Driveway	SSS	AM	1.3 (4.6)	A (A)	1.3 (2.7)	A (A)
		MD	1.7 (3.8)	A (A)	1.5 (4.3)	A (A)
		PM	1.8 (5.0)	A (A)	1.7 (6.2)	A (A)
		SA	1.9 (5.7)	A (A)	**52.5 (>180)**	**F (F)**
6. Admiral Callaghan Lane/Turner Parkway	Signal	AM	8.2	A	15.3	B
		MD	13.7	B	41.8	E
		PM	15.6	B	27.9	C
		SA	17.7	B	**117.4**	**F**
7. Admiral Callaghan Lane/Rotary Way	Signal	AM	7.2	A	9.7	A
		MD	11.7	B	**75.0**	**F**
		PM	11.7	B	**96.4**	**F**
		SA	34.1	D	**>180**	**F**
8. Admiral Callaghan Lane/Commercial Driveway	SSS	AM	0.9 (1.5)	A (A)	0.8 (1.2)	A (A)
		MD	2.3 (2.7)	A (A)	8.9 (13.9)	A (B)
		PM	2.4 (9.0)	A (A)	12.4(20.0)	B (C)
		SA	10.4 (17.9)	B (C)	**45.8 (130.6)**	**E (F)**
9. Redwood Street/Fairgrounds Drive/I-80 WB Ramps	Signal	AM	65.6	E	**152.0**	**F**
		MD	12.3	B	**103.0**	**F**
		PM	**89.8**	**F**	**123.8**	**F**
		SA	**98.2**	**F**	**155.4**	**F**
10. Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp	Signal	AM	34.6	C	41.6	D
		MD	39.6	D	59.9	E
		PM	37.3	D	68.1	E
		SA	58.8	E	74.2	E

Table 10: Intersection Levels of Service — Cumulative Conditions

Location	Control[1, 2]	Peak Hour	Cumulative Conditions[3]		Cumulative with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
11. Redwood Parkway/Admiral Callaghan Lane (S)	Signal	AM	76.6	E	**149.2**	**F**
		MD	**>180**	**F**	**125.6**	**F**
		PM	**>180**	**F**	**154.1**	**F**
		SA	**153.1**	**F**	**>180**	**F**
12. Plaza Drive/Gateway Plaza	Signal	AM	25.7	C	25.1	C
		MD	14.3	B	11.3	B
		PM	14.5	B	10.9	B
		SA	27.8	C	13.6	B
13. Plaza Drive/Costco Driveway	SSS	AM	5.7 (13.6)	A (B)	5.4 (13.6)	A (B)
		MD	**110.3 (>180)**	**F (F)**	9.4 (32.9)	A (D)
		PM	**80.8 (>180)**	**F (F)**	7.6 (28.2)	A (D)
		SA	**>180 (>180)**	**F (F)**	**33.3 (166.3)**	**D (F)**
14. Plaza Drive/Turner Parkway	Signal	AM	10.0	B	10.4	B
		MD	14.4	B	12.2	B
		PM	36.5	D	12.1	B
		SA	16.1	B	13.1	B
15. Turner Parkway/Foothill Drive	SSS	AM	2.4 (10.2)	A (B)	2.1 (11)	A (B)
		MD	2.3 (15.4)	A (C)	2.3 (17.5)	A (C)
		PM	2.3 (15.9)	A (C)	2.3 (16.9)	A (C)
		SA	2.6 (18.5)	A (C)	2.7 (21.6)	A (C)
16. Redwood Parkway/Foothill Drive	SSS	AM	1.7 (14.4)	A (B)	1.6 (15.1)	A (B)
		MD	2.9 (20.6)	A (C)	3.3 (28.8)	A (D)
		PM	3.0 (20.5)	A (C)	3.4 (31.8)	A (D)
		SA	3.6 (24.2)	A (C)	4.4 (42.4)	A (E)
17. Redwood Parkway/Oakwood Drive	Signal	AM	7.9	A	7.8	A
		MD	11.2	A	11.1	A
		PM	13.9	B	13.8	B
		SA	13.7	B	14	B
18. Redwood Parkway/Ascot Parkway	Signal	AM	16.2	B	16.6	B
		MD	16.8	B	18.7	B
		PM	18.2	B	20.6	B
		SA	17.5	B	20.2	B
19. Turner Parkway/Western Residential Project Driveway	Signal	AM	-	-	6.4	A
		MD			5.3	A
		PM			5.5	A
		SA			5.4	A
20. Turner Parkway/Eastern Residential Project Driveway	SSS	AM	-	-	0.4 (8.9)	A (A)
		MD			0.1 (10.0)	A (B)
		PM			0.1 (10.0)	A (B)
		SA			0.1 (10.4)	A (B)

Table 10: Intersection Levels of Service — Cumulative Conditions

Location	Control[1, 2]	Peak Hour	Cumulative Conditions[3]		Cumulative with Project Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
21. Admiral Callaghan Lane/Southern Project Driveway	SSS	AM	-	-	1.4 (3.9)	A (A)
		MD			**30.4 (52.1)**	**D (F)**
		PM			**40.2 (80.3)**	**E (F)**
		SA			**65.9 (153.4)**	**F (F)**
22. Admiral Callaghan Lane/Middle Project Driveway	Signal	AM	-	-	4.1	A
		MD			25.2	C
		PM			45.6	D
		SA			**96.6**	**F**
23. Admiral Callaghan Lane/Northern Project Driveway	SSS	AM	-	-	1.6 (7.5)	A (A)
		MD			**9.0 (72.4)**	**A (F)**
		PM			**18.1 (>180)**	**C (F)**
		SA			**76.5 (>180)**	**F (F)**
24. I-80 SB Ramp/Redwood Parkway	Signal	AM	21.5	C	36.0	D
		MD	15.6	B	62.7	E
		PM	23.2	C	58.5	E
		SA	43.6	D	45.2	D
25. I-80 SB Ramp/Redwood Parkway	Signal	AM	30.3	C	39.3	D
		MD	21.6	C	**80.1**	**F**
		PM	19.7	B	66.2	E
		SA	47.9	D	**175.4**	**F**

Notes:
1. Signal = signalized intersection; AWS=all-way stop; SSS=side street stop
2. For side-street stop-controlled intersections, two service levels are listed: Average intersection LOS (LOS for worst side-street movement)
3. **Bold** indicates below-standard service level. Shaded indicates a significant impact.
Source: Fehr & Peers, December 2019.

Based on the above intersection analysis, including the corridor simulations of Redwood Parkway, Admiral Callaghan Lane and Turner Parkway, the roadway segments of Redwood Parkway between Fairgrounds Drive and Admiral Callaghan Lane and Admiral Callaghan Lane between Redwood Parkway and Turner Parkway would operate unacceptably under Cumulative With Project conditions.

Queues

The 50th and 95th percentile vehicle queues were estimated using SimTraffic 9.0 for all controlled movements at Intersections 4 through 11, as presented in **Appendix E**.

Under Cumulative Without Project conditions, 95th percentile vehicle queues are projected to exceed the storage capacity for certain movements at the intersections listed below. Note that the 95th percentile queues are those that are projected to occur during only 5% or less of the entire peak hour.

- Intersection #7: Admiral Callaghan Lane/Rotary Way: westbound right turn during all peak hours, southbound left and southbound through during the Saturday mid-day peak hour.
- Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps: southbound through in the Saturday mid-day peak hour.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps: westbound through during all peak hours, southbound left during the weekday AM, weekday PM and Saturday mid-day peak hour, eastbound right and westbound through/right during the weekday AM and weekday PM peak hours, and eastbound left during the Saturday mid-day peak hour.
- Intersection #10: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp: southbound right, westbound through, and westbound through/right during all peak hours, eastbound left during the Weekday mid-day peak hour.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S): shared eastbound through/right and northbound left turn during all peak hours, eastbound through during the weekday mid-peak and PM hour, westbound through and shared westbound through/right during the weekday AM, weekday mid-day and Saturday mid-day peak hours.

Under Cumulative With Project conditions, 95th percentile vehicle queues are projected to exceed the storage capacity for certain movements at the intersections listed below. Intersections that are <u>not</u> significantly impacted based on delay and LOS, as described above, are identified with an asterisk. The instance of a queue exceeding available storage is not in itself a significant impact based on the significance criteria, but rather a condition reflecting the service to individual movements at an intersection.

- Intersection #4*: Admiral Callaghan Lane/Vallejo Corners: westbound right during the Saturday mid-day peak hour, westbound left during the weekday mid-day, weekday PM, and Saturday mid-day peak hours.
- Intersection #5*: Admiral Callaghan Lane/Target driveway: northbound through and northbound through/right during the Saturday mid-day peak hour.
- Intersection #6: Admiral Callaghan Lane/Turner Parkway: northbound through during the Saturday mid-day peak hour, northbound through/right during the weekday PM and Saturday mid-day peak hours, westbound left and shared westbound left/right during the weekday mid-day and Saturday mid-day peak hours.

- Intersection #7: Admiral Callaghan Lane/Rotary Way: northbound through during the weekday AM, weekday mid-day and Saturday mid-day peak hours, northbound shared through/right, westbound right and southbound through during all peak hours, southbound left during the weekday AM, weekday PM and Saturday mid-day peak hours
- Intersection #8*: Admiral Callaghan Lane/I-80 EB Ramps: northbound through and northbound through/right during Saturday mid-day peak hour, southbound through during all peak hours.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps: eastbound left and through during all peak hours, southbound left during the weekday AM, weekday mid-day and weekday PM peak hour, southbound right during the weekday mid-day peak hour
- Intersection #10*: Redwood Parkway/Admiral Callaghan Lane (N)/I-80 EB Off-Ramp: southbound left during the weekday AM and weekday PM peak period, southbound right during all peak hours, eastbound left during the Saturday mid-day peak hour
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S): northbound left during the weekday AM and Saturday mid-day peak hour, northbound through/right during the weekday AM, weekday PM and Saturday mid-day peak hour, shared eastbound through/right and northbound left, westbound through, and westbound shared through/right during all peak hours, eastbound through during the weekday AM and weekday PM peak hours.

Signal Warrant Analysis

The unsignalized intersection of Intersection #13: Plaza Drive/Costco Driveway experiences high levels of delay for vehicles turning on to Plaza Drive. The intersection meets peak hour signal warrants during the weekday mid-day, weekday PM, and Saturday mid-day peak hours studied under Cumulative No Project conditions. Under Cumulative with Project conditions, this intersection meets peak hour signal warrants during the Saturday peak hour only. Intersection #13 does not meet peak hour signal warrants in the weekday AM peak hour under Cumulative and Cumulative with Project conditions. The unsignalized intersections of Intersection #5: Admiral Callaghan Lane/Target Driveway and Intersection #8: Admiral Callaghan Lane/I-80 EB Ramps do not meet peak hour signal warrants in any of the peak hours studied under Cumulative and Cumulative with Project conditions.

The unsignalized intersection of Intersection #20 Turner Parkway/Eastern Residential Project Driveway does not meet signal warrants in any of the peak hours studied under Cumulative with Project conditions. Intersection #23: Admiral Callaghan Lane/Northern Project Driveway and Intersection #21: Admiral Callaghan Lane/Southern Project Driveway experience high levels of delay for vehicles turning on to Admiral Callaghan Lane, these intersections meet peak hour signal warrants during all three peak hours studied under Cumulative with Project conditions.

Refer to the Signal Warrant section in Chapter 2 for a discussion of how the peak hour volume signal warrant relates to the process of considering whether to install a new traffic signal.

Appendix D provides the Cumulative conditions signal warrant worksheets.

Impacts and Mitigations

Impact TRA-3: **The implementation of the Project under Cumulative With Project conditions is projected to significantly impact eight intersections during peak hours.**

The Project would significantly impact the following intersections in the weekday mid-day, weekday PM and/or Saturday mid-day peak hours:

- Intersection # 6: Admiral Callaghan Lane/Turner Parkway – In the Saturday mid-day peak hour, the intersection operates at LOS B without the Project and operates at LOS F with the Project.
- Intersection #7: Admiral Callaghan Lane/Rotary Way – In all but the AM peak hour, the intersection operates at LOS D or better without the Project and operates at LOS F with the Project.
- Intersection #9: Redwood Street/Fairgrounds Drive/I-80 WB Ramps – In the weekday AM and mid-day peak hours, the intersection operates at LOS E or better without the Project and operates at LOS F with the Project. In the weekday PM and Saturday mid-day peak hours, the intersection operates at LOS F without the Project and the delay increases with the addition of Project traffic.
- Intersection #11: Redwood Parkway/Admiral Callaghan Lane (S) – In the AM peak hour, the intersection operates at LOS E without the Project and LOS F with the Project. In the Saturday mid-day peak hour, the intersection operates at LOS F without the Project and the delay increases with the addition of Project traffic.
- Intersection #21: Admiral Callaghan Lane/Southern Project Driveway – In all but the AM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.
- Intersection #22: Admiral Callaghan Lane/Middle Project Driveway – In the Saturday mid-day peak hour, the intersection operates at LOS F.
- Intersection #23: Admiral Callaghan Lane/Northern Project Driveway – In all but the AM peak hour, the unsignalized intersection meets peak hour signal warrants and the worst approach operates at LOS F.
- Intersection #25: I-80 NB Ramp/Redwood Parkway – In the weekday mid-day and Saturday mid-day peak hours, the intersection operates at LOS E or better without the Project and operates at LOS F with the Project.

Mitigation Measure TRA-3:

- Contribute to the planned I-80/Redwood Parkway interchange improvement through payment of the Solano County Regional Transportation Impact Fee. This fee is collected by the City prior to issuance of building permits. The fees collected are transferred to Solano County and the funds are managed by the Solano Transportation Authority.

The proposed mitigation does not improve the LOS or delay at impacted intersections #6, #7, #9, #11 and #21 to an acceptable level. Intersection delays improve at some of these intersections, but the vehicle spillback from intersections #9, and #10 causes intersections #6, #7, #21, #23 and #25 to fail despite the improvements provided by the mitigations. Intersection #25 has no feasible mitigation. However, improvements at upstream intersections due to the proposed mitigations alleviate queue spillback and improve operations to an acceptable level in the weekday mid-day peak hour, and intersection delays are improved but not to an acceptable level in the Saturday mid-day peak hour. The improvements at intersections #6, #7, and #22 improve operations at intersection #18 to an acceptable level.

With the proposed mitigation, the impacts at intersections #6, #7, #9, and #11, #21, #23 and #25 are significant and unavoidable. These intersections operate at an unacceptable level-of-service under Cumulative With Project conditions, and continue to operate at an unacceptable level with mitigations. Mitigated level of service results for all impacted intersections are presented in **Table 11**.

The project contributes its fair share payment of traffic impact fees to the Solano Transportation Authority. However, the funding for the improvements at this interchange are administered by the County and outside the control of the City. Additionally, these improvements are located within Caltrans right-of-way and also outside the control of the City. No other feasible mitigation measures have been identified which would further mitigate the impacts. Insufficient right-of-way exists to add capacity to the City of Vallejo intersections which are significantly impacted. Therefore, these impacts remain significant and unavoidable.

Table 11: Mitigated Intersection Levels of Service: Cumulative With Project Conditions

Location	Control[1, 2]	Peak Hour	With Project Conditions[3]		With Mitigations Conditions[3]	
			Delay (seconds)	LOS	Delay (seconds)	LOS
Cumulative Conditions						
6. Admiral Callaghan Lane/Turner Parkway	Signal	AM MD PM SA	15.3 41.8 27.9 **117.4**	B **E** **C** **F**	11.4 33.5 46.5 **>180**	B C D **F**
7. Admiral Callaghan Lane/Rotary Way	Signal	AM MD PM SA	9.7 **75** **96.4** **>180**	A **F** **F** **F**	10.2 **91.3** **112.7** **>180**	B **F** **F** **F**
9. Redwood Street/Fairgrounds Drive/I-80 WB Ramps	Signal	AM MD PM SA	**152.0** **103.0** **123.8** **155.4**	**F** **F** **F** **F**	**121.4** **96.6** **115.8** **101.3**	**F** **F** **F** **F**
11. Redwood Parkway/Admiral Callaghan Lane (S)	Signal	AM MD PM SA	**149.2** **125.6** **154.1** **>180**	**F** **F** **F** **F**	**149.3** **114.1** **146.6** **121.4**	**F** **F** **F** **F**
21. Admiral Callaghan Lane/Southern Project Driveway	SSS	AM MD PM SA	1.4 (3.9) **30.4 (52.1)** **40.2 (80.3)** **65.9 (153.4)**	A (A) **D (F)** **E (F)** **F (F)**	1.5 (5.7) **38.2 (69.1)** **42.5 (90.1)** **64.3 (88.7)**	A (A) **D (F)** **E (F)** **F (F)**
22. Admiral Callaghan Lane/Middle Project Driveway	Signal	AM MD PM SA	4.1 25.2 45.6 **96.6**	A C D **F**	2.9 32.9 58.2 66.8	A C E E
23. Admiral Callaghan Lane/Northern Project Driveway	SSS	AM MD PM SA	1.6 (7.5) **9.0 (72.4)** **18.1 (>180)** **76.5 (>180)**	A (A) **A (F)** **C (F)** **F (F)**	1.5 (7.2) **11.0 (76.2)** **26.1 (172.5)** **48.8 (140.6)**	A (A) **B (F)** **D (F)** **E (F)**
25. I-80 SB Ramp/Redwood Parkway	Signal	AM MD PM SA	39.3 **80.1** 66.2 **175.4**	D **F** E **F**	42.2 79.5 70.4 **86.3**	D E E **F**

Notes:
1. Signal = signalized intersection; AWS=all-way stop; SSS=side street stop
2. For side-street stop-controlled intersections, two service levels are listed: Average intersection LOS (LOS for worst side-street movement)
3. **Bold** indicates below-standard service level.
Source: Fehr & Peers, December 2019.

Freeway Analysis

For freeway mainline segments, level of service (LOS) is a function of traffic density and describes the resulting delay experienced by people driving. LOS scores are compared to the minimum operating standards defined by Caltrans in **Table 12** below. With the addition of Project traffic, all freeway segments experience an increase in density. Five of the analysis segments are projected to operate at or above the minimum level of service standards for highway facilities set by Caltrans, LOS E or better. One segment, I-80 Eastbound west of Redwood Parkway, is projected to operate deficiently at LOS F in the Cumulative Conditions. In the Cumulative with Project Conditions, the segment would continue to operate at LOS F, and 194 vehicles are added to segment with the addition of Project traffic.

Table 12: Weekday PM Freeway Analysis — Cumulative Conditions

Segment	Cumulative Conditions			Cumulative with Project Conditions		
	Volume	Density	LOS	Volume	Delay	LOS
7. West Bound – East of Columbus Parkway	4,220	19.7	C	4,271	19.9	C
8. Westbound – Redwood Parkway/Columbus Parkway	5,410	25.9	C	5,554	26.6	D
9. Westbound – West of Redwood Parkway	5,630	38.7	E	5,726	39.7	E
10. Eastbound – East of Columbus Parkway	5,870	39.4	E	5,921	40.0	E
11. Eastbound – Redwood Parkway/Columbus Parkway	3,580	22.7	C	3,754	23.9	C
12. Eastbound – West of Redwood	6,290	Demand Exceeds Capacity	**F**	6,484	Demand Exceeds Capacity	**F**

[1] Density Reported in Passenger Cars per Mile Per Lane

Source: Fehr & Peers, December 2019.

Impacts and Mitigations

Based on the significance thresholds presented in Section 2, this segment is significantly impacted in the Cumulative With Project case.

Impact TRA-4: **The implementation of the Project under Cumulative With Project conditions is projected to significantly impact one freeway segment during the weekday PM peak hour.**

The Project would significantly impact the following freeway segment in the weekday PM peak hour:

- Segment #6: I-80 Eastbound – West of Redwood – In the weekday PM peak hour, the segment operates at LOS F without the Project and operates at LOS F with the Project, and the Project adds more than 50 trips.

Mitigation Measure TRA-4: Implement Mitigation Measure TRA-3.

The project applicant will contribute to the funding of freeway improvement projects through the payment of the Solano County Regional Transportation Impact Fee. However, because no mainline freeway capacity projects are currently planned to be funded by the fee, and because the project applicant and the City of Vallejo do not control the funding, prioritization and construction of freeway improvement projects, this impact would remain significant and unavoidable.

CHAPTER 7 – TRANSIT, PEDESTRIAN AND BICYCLIST IMPACT ASSESSMENT

This chapter provides an assessment of site access and internal circulation for pedestrians, bicycles, and emergency vehicles based on the conceptual site plan presented previously on **Figure 2.**

Pedestrian Access and Circulation

Pedestrian access to the residential portion of the Project is provided via sidewalks along Turner Parkway, as well as a multi-use path set back from the roadway with landscaping on both sides. The pathway connects the residential and retail uses onsite. Pedestrians wishing to cross to the other side of Turner Parkway at a protected crossing to access commercial uses would use the proposed traffic signal at the western residential project driveway. There is a bus stop pull-out for westbound buses and a pedestrian path entering the commercial area directly across from the proposed new residential driveways. While the bus stop is currently not posted for regular service, it may be in the future, based on the recommendations under Transit Service, below.

Currently, no sidewalks are provided along Admiral Callaghan Lane along the project frontage. A continuous sidewalk will be provided on the east side of the roadway, connecting to the existing sidewalks to the north and south, as part of the Admiral Callaghan Lane widening which will be constructed in conjunction with the Project.

The Project site plan shows sidewalks within the residential portion of the project, with periodic cut-outs for parking, and designated pedestrian routes within the Costco/retail portion of the site. The plan also includes an east-west multi-use pathway along Turner Parkway between the retail and residential portions of the site.

Bicycle Access and Circulation

While the Project's bicycle trip generation has not been estimated, it is expected that some Costco and retail customers and apartment residents will travel by bicycle to and from the site. Bicycle lanes are currently provided on Turner Parkway in the Project vicinity, and sharrows are provided on Admiral Callaghan Lane to the north and south of the Project site. The Vallejo General Plan 2040 identifies the section of Admiral Callaghan Lane between Turner Parkway and Redwood Parkway as a future Class II bike lane facility.

Northbound and southbound bicycle lanes will be provided as part of the Admiral Callaghan Lane widening which will be constructed in conjunction with the Project.

Transit Access and Circulation

It is expected that some customers, employees and residents will travel by bus to and from the Project site. As described in Chapter 2, several SolTrans bus routes – including routes 2, 7, 20 and 38 -- serve the area surrounding the project site, although no stops are currently located along the Project frontages. According to the route maps, the closest stops are on Admiral Callaghan Lane near Rotary Way, south of the project site, and at the Target on Admiral Callaghan Lane north of the project site. SolTrans has indicated that a new bus pull-out on eastbound Turner Parkway east of the Admiral Callaghan Lane intersection would be needed to serve the residents, employees and customers of the Project.

Impact TRA-5: The Project will generate bus transit demand requiring a new bus stop on eastbound Turner Parkway. If the new stop is not provided, trips which would otherwise be made by bus might be made by car, worsening impacts on traffic congestion, air quality and greenhouse gases. This is a significant impact.

Mitigation Measure TRA-5: The Project applicant will coordinate with SolTrans to determine the location, design and timing of installation of a new bus pull-out on eastbound Turner Parkway east of Admiral Callaghan Lane. The Project applicant will construct a pull-out and concrete pad, and install signage, a shelter, lighting, and trash receptacle to be furnished by SolTrans.

With this mitigation, the impact would be reduced to a less-than-significant level.

Emergency Vehicle Access

Several factors determine whether a project has sufficient access for emergency vehicles, including:

1. Number of access points (both public and emergency access only)
2. Width of access points
3. Width of internal roadways

The site plan provides three vehicle access points for the Costco and retail portions of the Project on Admiral Callaghan Lane, and two vehicle access points for the residential portion of the Project on Turner Parkway. If one of these driveways were blocked or obstructed, emergency vehicles would have an alternative route to access the site. Based on preliminary site plan information, project driveways and drive aisles provide a minimum of 24-feet clear travel area which is sufficient for emergency vehicle access and circulation. Therefore, no impacts related to emergency vehicle access are identified.

Appendix A:
Traffic Counts



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Columbus Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-001
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

Admiral Callaghan Ln — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	-10	NOON
PM	1	0	3	0	7	PM

EASTBOUND — Columbus Pkwy

AM	NOON	PM	
0	1316	1574	⇦
0	12	6	↶ 0
0	-11	6	↱ 0
0	450	713	→ 0
0	863	856	↴ 0
AM	NOON	PM	

WESTBOUND — Columbus Pkwy

PM	NOON	AM	
1	1	0	↰ 0
705	494	0	← 0
181	162	0	↰ 0
0	1	0	↰ 0
986	679	0	⇨
PM	NOON	AM	

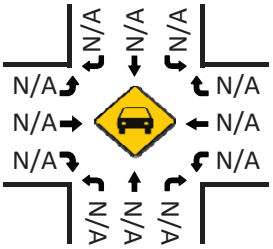
CONTROL

	0		
TEV	0	3010	3604
	AM	NOON	PM
PHF		0.94	0.94

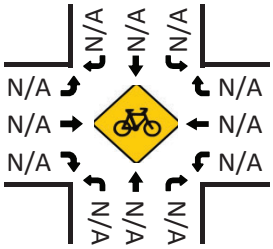
PM	1037	0	862	0	270	PM
NOON	1025	0	810	0	228	NOON
AM	0	0	0	0	0	AM

Admiral Callaghan Ln — NORTHBOUND

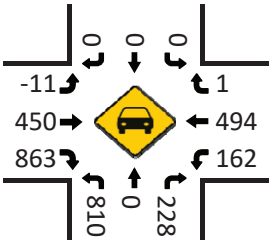
Total Vehicles (AM)



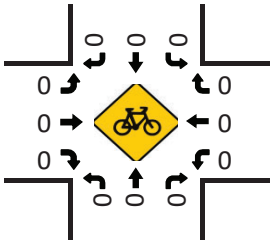
Bikes (AM)



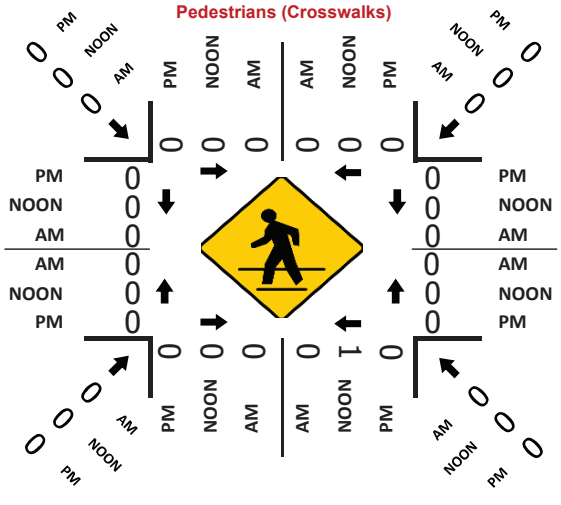
Total Vehicles (Noon)



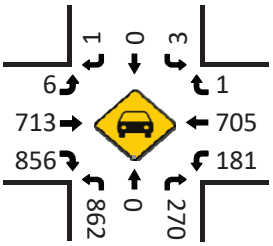
Bikes (NOON)



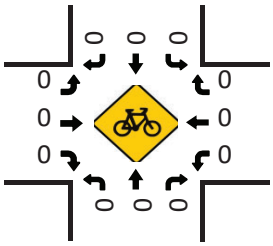
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Auto Club Way & Admiral Callaghan Ln

Peak Hour Turning Movement Count

ID: 17-07956-002
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Auto Club Way — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	92	7	129	0	125	NOON
PM	59	7	122	0	125	PM

Admiral Callaghan Ln — EASTBOUND

AM	NOON	PM	
0	870	819	⇦
0	0	0	↶ 0
0	82	83	↱ 0
0	733	831	→ 0
0	40	27	↴ 0
AM	NOON	PM	

Admiral Callaghan Ln — WESTBOUND

PM	NOON	AM	
36	37	0	0 ↰
738	745	0	0 ←
174	165	0	0 ↰
0	0	0	0 ↶
1095	979	0	⇨
PM	NOON	AM	

CONTROL

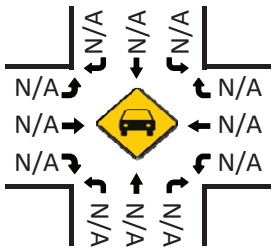
0

		AM	NOON	PM
TEV		0	2186	2247
PHF			0.94	0.97

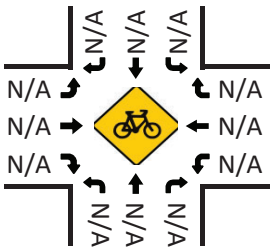
Auto Club Way — NORTHBOUND

PM	208	0	22	6	142	PM
NOON	212	0	33	6	117	NOON
AM	0	0	0	0	0	AM

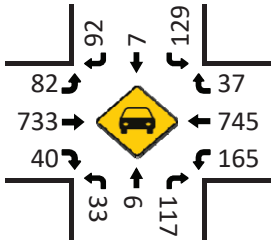
Total Vehicles (AM)



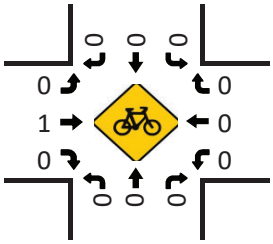
Bikes (AM)



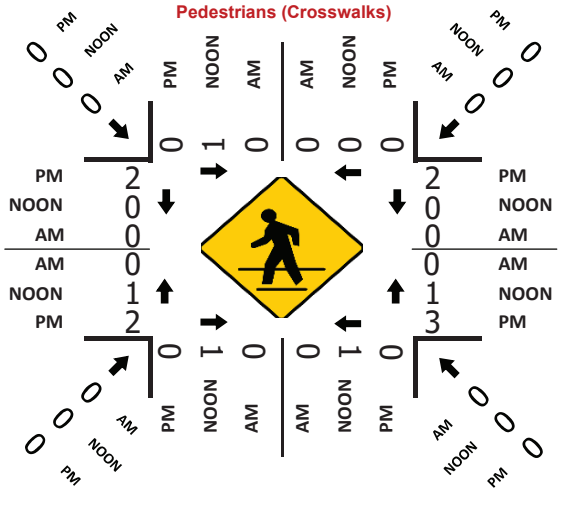
Total Vehicles (Noon)



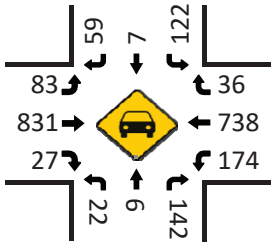
Bikes (NOON)



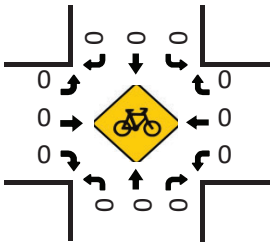
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Admiral Callaghan Ln

Peak Hour Turning Movement Count

ID: 17-07956-003
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:30 PM - 01:30 PM	12:00 PM - 02:00 PM
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND (Plaza Dr)

AM	0	0	0	0	0	AM
NOON	55	57	107	0	257	NOON
PM	36	39	105	0	226	PM

EASTBOUND (Admiral Callaghan Ln)

AM	NOON	PM	
0	458	428	⇦
0	0	0	↰ 0
0	74	53	↱ 0
0	349	423	→ 0
0	103	105	↳ 0
AM	NOON	PM	

WESTBOUND (Admiral Callaghan Ln)

PM	NOON	AM	
121	141	0	0 ↱
293	310	0	0 ←
414	427	0	0 ↰
0	0	0	0 ↳
923	870	0	⇨
PM	NOON	AM	

NORTHBOUND (Plaza Dr)

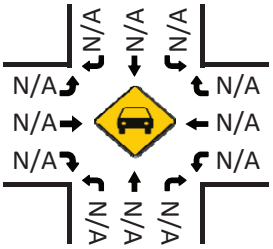
PM	558	0	99	52	395	PM
NOON	587	0	93	42	414	NOON
AM	0	0	0	0	0	AM

CONTROL

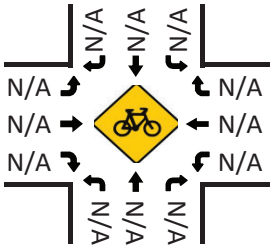
0

TEV	0 AM	2172 NOON	2135 PM
PHF		0.92	0.95

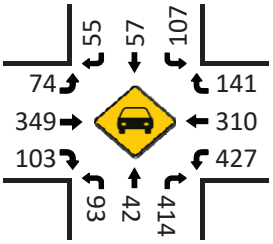
Total Vehicles (AM)



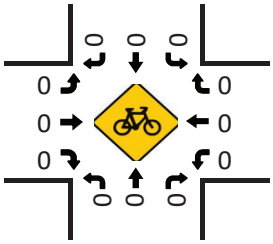
Bikes (AM)



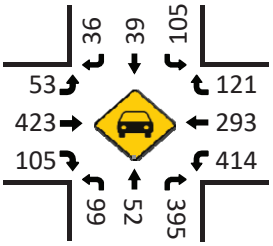
Total Vehicles (Noon)



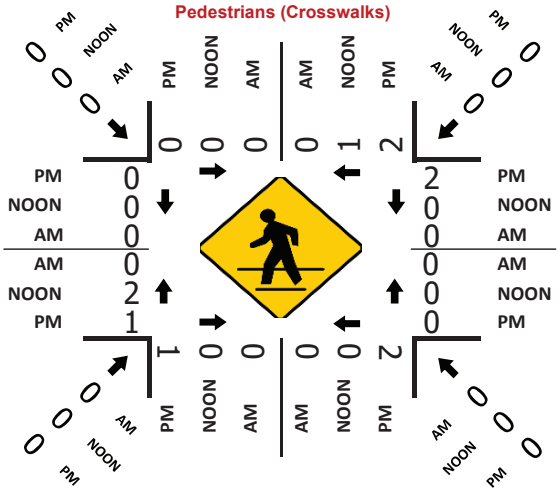
Bikes (NOON)



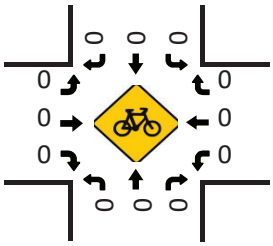
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Target Dwy

Peak Hour Turning Movement Count

ID: 17-07956-004
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Admiral Callaghan Ln

AM	0	0	0	0	0	AM
NOON	0	326	59	0	343	NOON
PM	0	292	67	0	433	PM

EASTBOUND — Target Dwy

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND — Target Dwy

PM	NOON	AM	
88	63	0	0
0	0	0	0
238	199	0	0
0	0	0	0
290	239	0	
PM	NOON	AM	

CONTROL

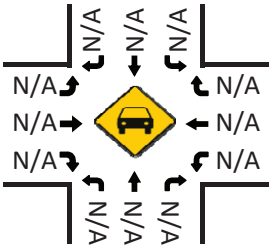
0

		AM	NOON	PM
TEV	0		1107	1253
PHF			0.96	0.90

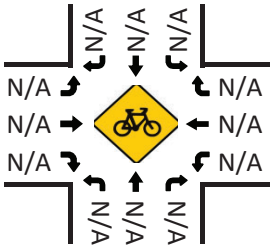
NORTHBOUND — Admiral Callaghan Ln

PM	530	0	0	345	223	PM
NOON	525	0	0	280	180	NOON
AM	0	0	0	0	0	AM

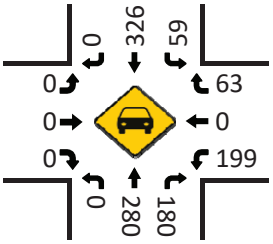
Total Vehicles (AM)



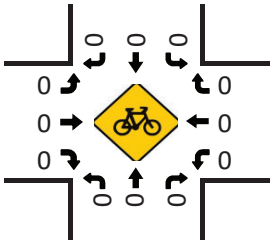
Bikes (AM)



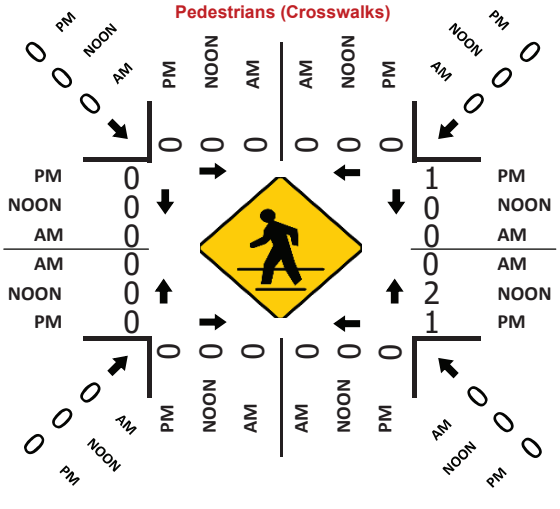
Total Vehicles (Noon)



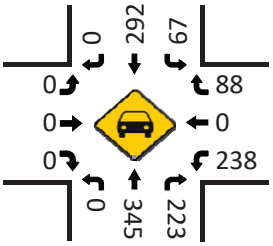
Bikes (NOON)



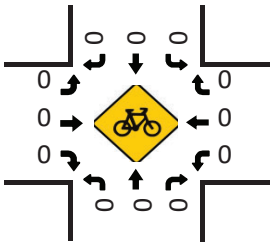
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Target Right Turn Only Dwy

Peak Hour Turning Movement Count

ID: 17-07956-005
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

SOUTHBOUND — Admiral Callaghan Ln

AM	0	0	0	0	0	AM
NOON	0	527	0	0	462	NOON
PM	0	517	0	0	555	PM

EASTBOUND — Target Right Turn Only Dwy

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND — Target Right Turn Only Dwy

PM	NOON	AM	
15	9	0	0
0	0	0	0
0	0	0	0
0	0	0	0
27	41	0	
PM	NOON	AM	

CONTROL

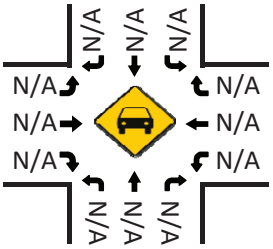
0

		AM	NOON	PM
TEV		0	1030	1099
PHF			0.94	0.92

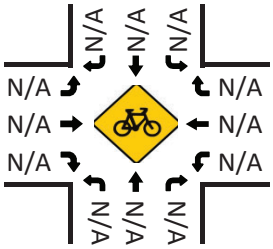
NORTHBOUND — Admiral Callaghan Ln

PM	517	0	0	540	27	PM
NOON	527	0	0	453	41	NOON
AM	0	0	0	0	0	AM

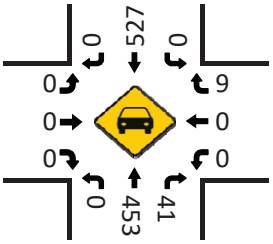
Total Vehicles (AM)



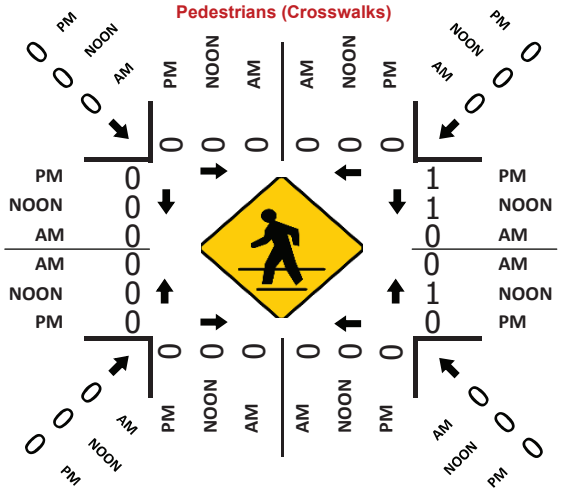
Bikes (AM)



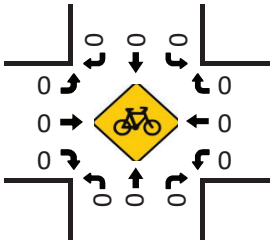
Total Vehicles (Noon)



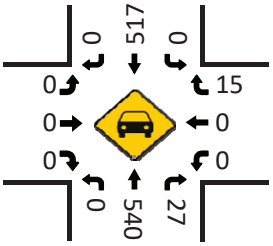
Pedestrians (Crosswalks)



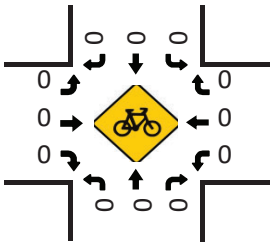
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Turner Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-006
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS

AM	NONE
NOON	12:45 PM - 01:45 PM
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

Admiral Callaghan Ln — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	489	39	4	502	NOON
PM	0	455	74	4	586	PM

EASTBOUND — Turner Pkwy

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND — Turner Pkwy

PM	NOON	AM	
39	25	0	0
0	0	0	0
340	351	0	0
27	23	0	0
367	317	0	
PM	NOON	AM	

CONTROL

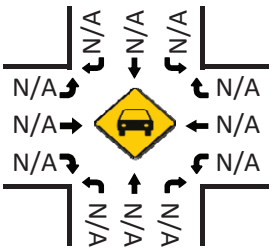
0

		AM	NOON	PM
TEV		0	1659	1748
PHF			0.97	0.95

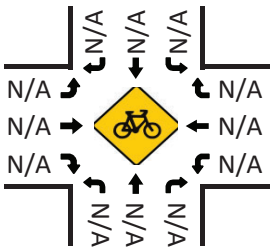
Admiral Callaghan Ln — NORTHBOUND

PM	795	0	0	543	266	PM
NOON	840	0	0	473	255	NOON
AM	0	0	0	0	0	AM

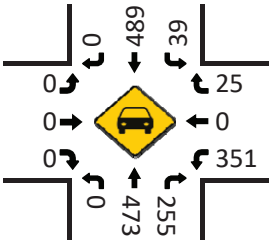
Total Vehicles (AM)



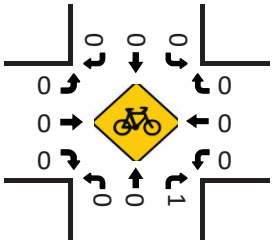
Bikes (AM)



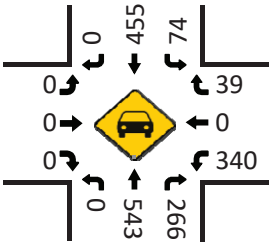
Total Vehicles (Noon)



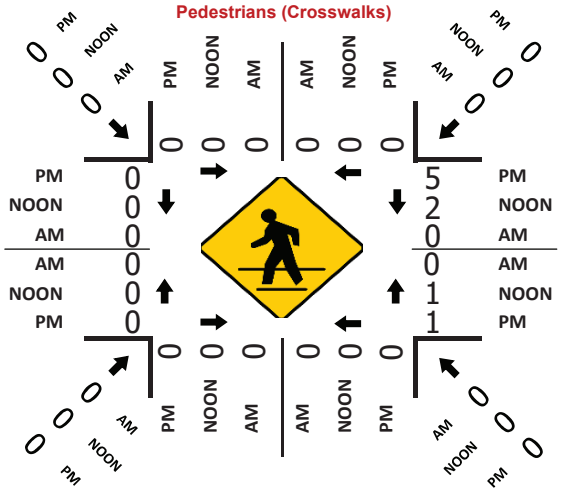
Bikes (NOON)



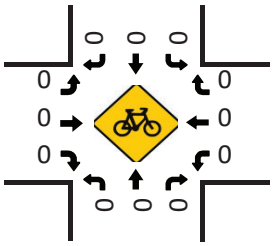
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Rotary Way

Peak Hour Turning Movement Count

ID: 17-07956-007
City: Vallejo

Day: Thursday
Date: 11/09/2017

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
PM	NONE	NONE

Admiral Callaghan Ln — SOUTHBOUND

	U-turn	Left	Through	Right		Total (approach)
AM	0	0	0	0	AM	0
NOON	0	768	92	0	NOON	719
PM	0	0	0	0	PM	0
	0	0	0	0		

Rotary Way — EASTBOUND

	AM	NOON	PM
Total	0	-1	0
U-turn (0)	0	0	0
Left (0)	0	0	0
Through (0)	0	0	0
Right (0)	0	0	0

Rotary Way — WESTBOUND

	PM	NOON	AM
Right (0)	0	64	0
Through (0)	0	0	0
Left (0)	0	160	0
U-turn (0)	0	0	0
Total	0	154	0

CONTROL

0

TEV	0	1801	0
	AM	NOON	PM
PHF		0.98	

Admiral Callaghan Ln — NORTHBOUND

	Total	U-turn	Left	Through	Right	
		0	0	0	0	
PM	0	0	0	0	0	PM
NOON	929	1	-1	655	62	NOON
AM	0	0	0	0	0	AM

Total Vehicles (AM)

All movements: N/A

Total Vehicles (Noon)

Southbound: 0 (U-turn), 768, 92
Westbound: 64, 0, 160
Eastbound: 0, 0, 0
Northbound: -1, 655, 62

Total Vehicles (PM)

All movements: N/A

Bikes (AM)

All movements: N/A

Bikes (NOON)

Southbound: 0, 0, 1
Westbound: 3, 0, 0
Eastbound: 0, 0, 0
Northbound: 0, 1, 0

Bikes (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (westward)	0	0	0
North (eastward)	0	0	0
West (southward)	0	0	0
West (northward)	0	0	0
East (southward)	0	2	0
East (northward)	0	2	0
South (eastward)	0	0	0
South (westward)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Admiral Callaghan Ln & I-80 EB Ramps/Dwy

Peak Hour Turning Movement Count

ID: 17-07956-008
City: Vallejo

Day: Thursday
Date: 11/09/2017

Admiral Callaghan Ln — SOUTHBOUND

PEAK HOURS		COUNT PERIODS
AM	NONE	AM
NOON	12:45 PM - 01:45 PM	NOON
PM	NONE	PM

AM	0	0	0	0	0	AM
NOON	98	906	0	0	735	NOON
PM	0	0	0	0	0	PM

I-80 EB Ramps/Dwy — EASTBOUND

AM	NOON	PM	
0	277	0	⇦
0	0	0	↶ 0
0	0	0	↱ 0
0	0	0	→ 0
0	404	0	↷ 0
AM	NOON	PM	

CONTROL

0

	AM	NOON	PM
TEV	0	2456	0
PHF		0.94	

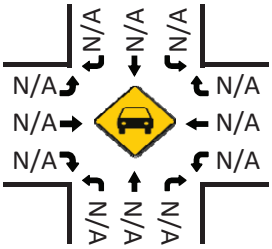
I-80 EB Ramps/Dwy — WESTBOUND

PM	NOON	AM	
0	13	0	↷ 0
0	0	0	← 0
0	0	0	↶ 0
0	0	0	↰ 0
0	133	0	⇨
PM	NOON	AM	

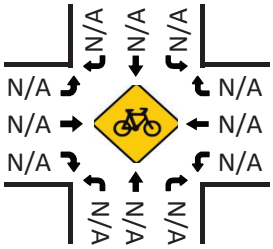
Admiral Callaghan Ln — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	1311	1	179	722	133	NOON
AM	0	0	0	0	0	AM

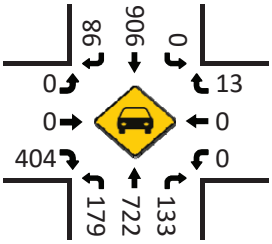
Total Vehicles (AM)



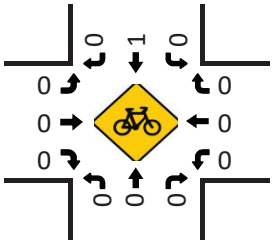
Bikes (AM)



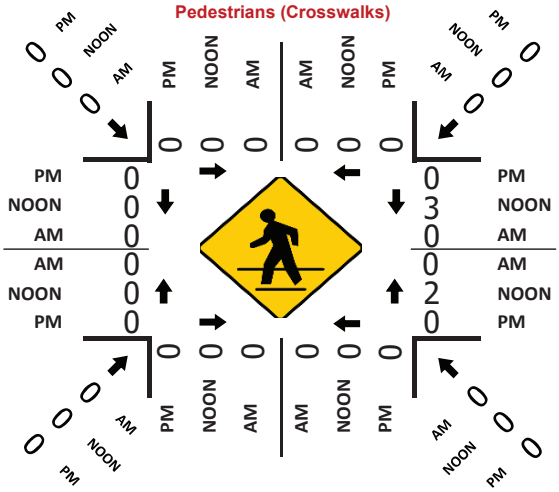
Total Vehicles (Noon)



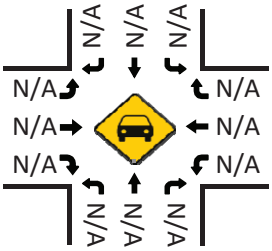
Bikes (NOON)



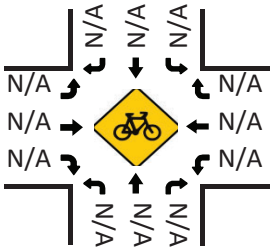
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

I-80 WB Ramps/Fairgrounds Dr & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-009
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	NONE

I-80 WB Ramps/Fairgrounds Dr — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	66	109	116	0	242	NOON
PM	0	0	0	0	0	PM

Redwood Pkwy — EASTBOUND

AM	NOON	PM	
0	1027	0	⇦
0	0	0	↶ 0
0	65	0	↱ 0
0	683	0	→ 0
0	434	0	↴ 0
AM	NOON	PM	

CONTROL

0

	AM	NOON	PM
TEV	0	3020	0
PHF		0.98	

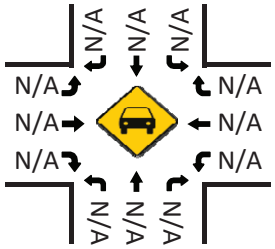
WESTBOUND — Redwood Pkwy

PM	NOON	AM	
0	177	0	↰ 0
0	961	0	← 0
0	409	0	↰ 0
0	0	0	↰ 0
0	799	0	⇨
PM	NOON	AM	

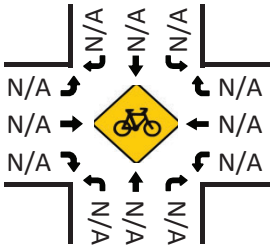
I-80 WB Ramps/Fairgrounds Dr — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	952	0	0	0	0	NOON
AM	0	0	0	0	0	AM

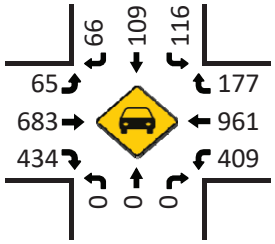
Total Vehicles (AM)



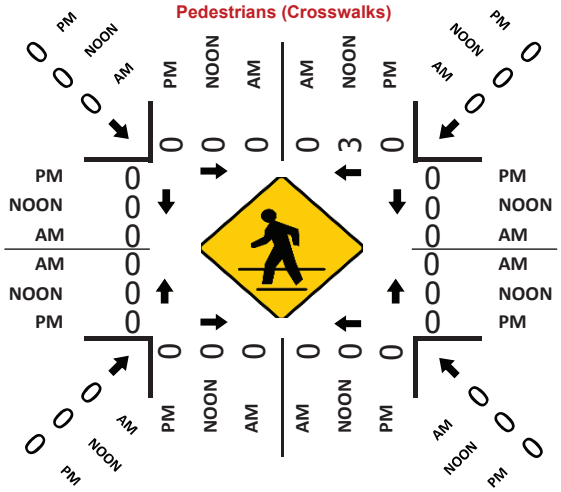
Bikes (AM)



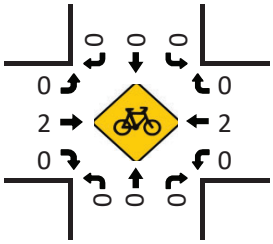
Total Vehicles (Noon)



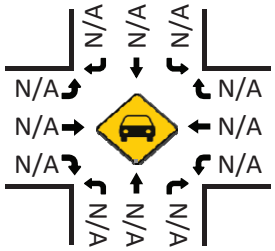
Pedestrians (Crosswalks)



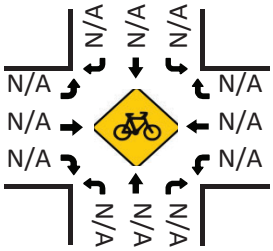
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

I-80 EB Ramps/Admiral Callaghan Ln North & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-010
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS: NONE | 01:00 PM - 02:00 PM | NONE

COUNT PERIODS: NONE | 12:00 PM - 02:00 PM | NONE

SOUTHBOUND — I-80 EB Ramps/Admiral Callaghan Ln North

AM	0	0	0	0	0	AM
NOON	1132	0	179	0	1062	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Redwood Pkwy

AM	NOON	PM
0	1561	0
0	0	0
0	507	0
0	398	0
0	0	0

WESTBOUND — Redwood Pkwy

PM	NOON	AM
0	224	0
0	424	0
0	0	0
0	0	0
0	691	0

CONTROL

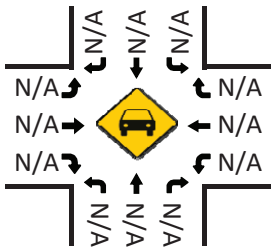
0

	AM	NOON	PM
TEV	0	3314	0
PHF		0.98	

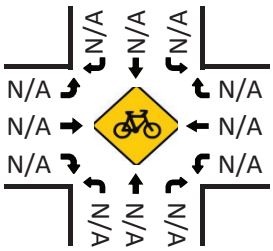
NORTHBOUND — EB Ramps/Admiral Callaghan Ln North

PM	0	0	0	0	0	PM
NOON	0	0	5	331	114	NOON
AM	0	0	0	0	0	AM

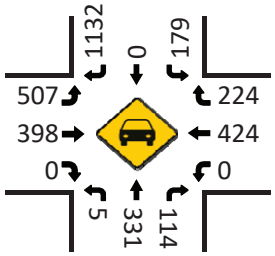
Total Vehicles (AM)



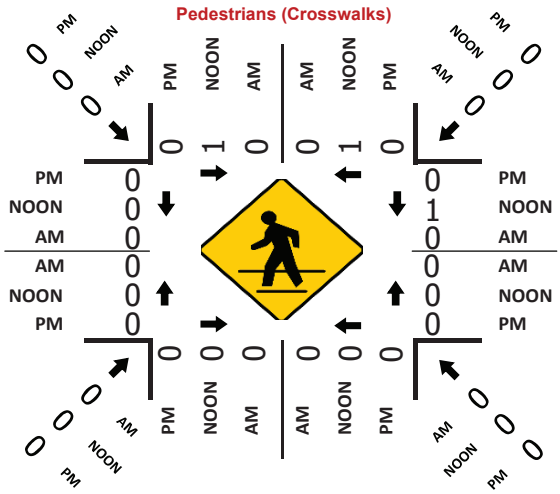
Bikes (AM)



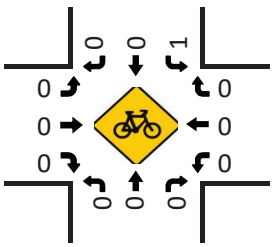
Total Vehicles (Noon)



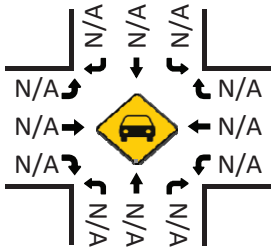
Pedestrians (Crosswalks)



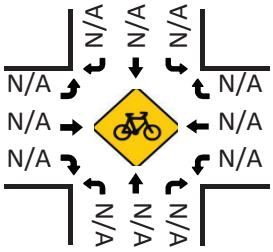
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-011
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	NONE

SOUTHBOUND — Admiral Callaghan Ln

AM	0	0	0	0	0	AM
NOON	7	2	1	0	-7	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Redwood Pkwy

AM	NOON	PM
0	645	0
0	16	0
0	-13	0
0	492	0
0	160	0

WESTBOUND — Redwood Pkwy

PM	NOON	AM
0	6	0
0	417	0
0	46	0
0	0	0
0	548	0

CONTROL

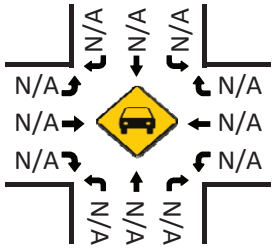
0

	AM	NOON	PM
TEV	0	1394	0
PHF		0.93	

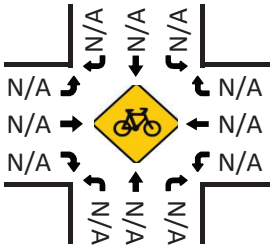
NORTHBOUND — Admiral Callaghan Ln

PM	0	0	0	0	0	PM
NOON	208	0	205	0	55	NOON
AM	0	0	0	0	0	AM

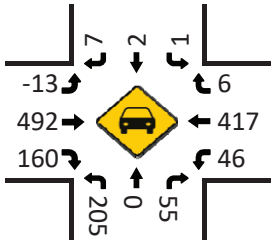
Total Vehicles (AM)



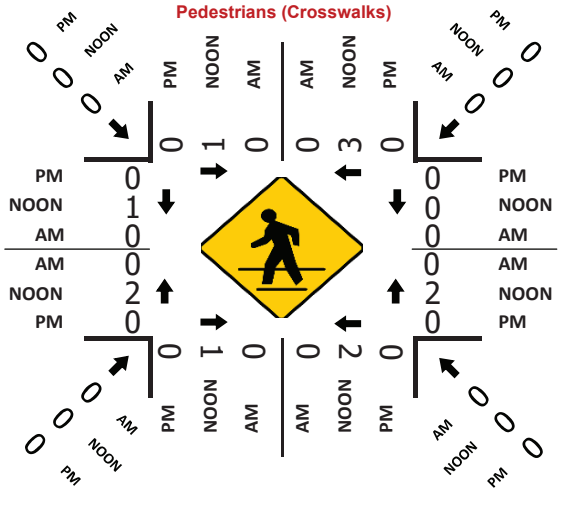
Bikes (AM)



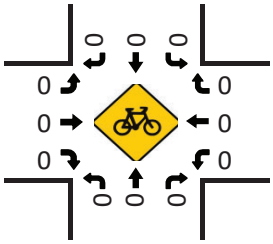
Total Vehicles (Noon)



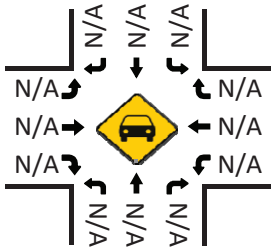
Pedestrians (Crosswalks)



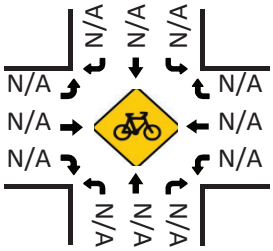
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Gateway Plaza

Peak Hour Turning Movement Count

ID: 17-07956-012
City: Vallejo

Day: Thursday
Date: 11/09/2017

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	12:15 PM - 01:15 PM	12:00 PM - 02:00 PM
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Plaza Dr — SOUTHBOUND

	Right	Thru	Left	U-turn	Total (approach)
AM	0	0	0	0	0
NOON	121	212	159	0	526
PM	117	188	153	0	562
Peds/Bikes	0	0	0	0	

Gateway Plaza — EASTBOUND

	AM	NOON	PM	
Departing	0	189	190	
U-turn	0	0	0	0
Left	0	131	140	0
Thru	0	41	29	0
Right	0	97	93	0

Gateway Plaza — WESTBOUND

	PM	NOON	AM	
Right	209	206	0	0
Thru	39	42	0	0
Left	136	128	0	0
U-turn	0	0	0	0
Departing	225	249	0	

Plaza Dr — NORTHBOUND

	Departing	U-turn	Left	Thru	Right
PM	417	0	34	213	43
NOON	437	0	26	189	49
AM	0	0	0	0	0
		0	0	0	0

CONTROL

0

	AM	NOON	PM
TEV	0	1401	1394
PHF		0.90	0.90

Total Vehicles (AM)

	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (Noon)

	Right	Thru	Left
Southbound	121	212	159
Eastbound	97	41	131
Westbound	206	42	128
Northbound	49	189	26

Total Vehicles (PM)

	Right	Thru	Left
Southbound	117	188	153
Eastbound	93	29	140
Westbound	209	39	136
Northbound	43	213	34

Bikes (AM)

	Left	Thru	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (NOON)

	Left	Thru	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Bikes (PM)

	Left	Thru	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	→	0	1	1
North	←	0	3	3
West	↓	0	0	1
West	↑	0	0	0
East	↓	0	0	0
East	↑	0	0	0
South	→	0	1	2
South	←	0	1	2
NW diagonal	↘	0	0	0
NE diagonal	↙	0	0	0
SW diagonal	↗	0	0	0
SE diagonal	↖	0	0	0

Prepared by National Data & Surveying Services

Plaza Dr & Costco Dwy

Peak Hour Turning Movement Count

ID: 17-07956-013
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

SOUTHBOUND — Plaza Dr

AM	0	0	0	0	0	AM
NOON	46	265	118	0	260	NOON
PM	32	300	85	0	285	PM

EASTBOUND — Costco Dwy

AM	NOON	PM	
0	97	83	⇦
0	0	0	↶ 0
0	22	21	↱ 0
0	23	15	→ 0
0	52	65	↴ 0
AM	NOON	PM	

WESTBOUND — Costco Dwy

PM	NOON	AM	
106	120	0	↰ 0
18	14	0	← 0
191	192	0	↰ 0
0	0	0	↶ 0
376	439	0	⇨
PM	NOON	AM	

NORTHBOUND — Plaza Dr

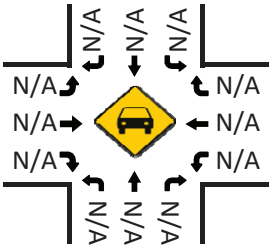
PM	556	0	33	158	276	PM
NOON	509	0	37	118	298	NOON
AM	0	0	0	0	0	AM

CONTROL

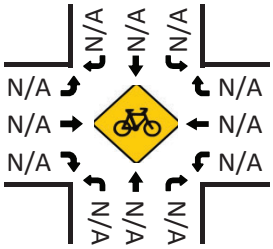
0

TEV	0 AM	1305 NOON	1300 PM
PHF		0.96	0.96

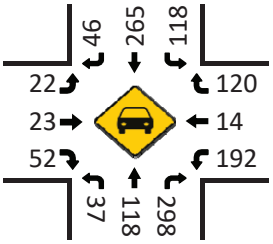
Total Vehicles (AM)



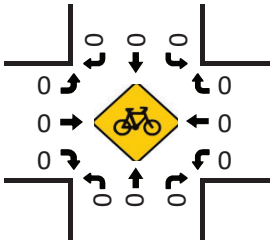
Bikes (AM)



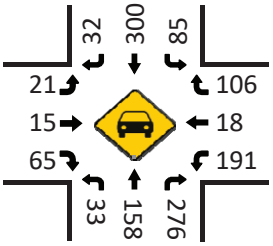
Total Vehicles (Noon)



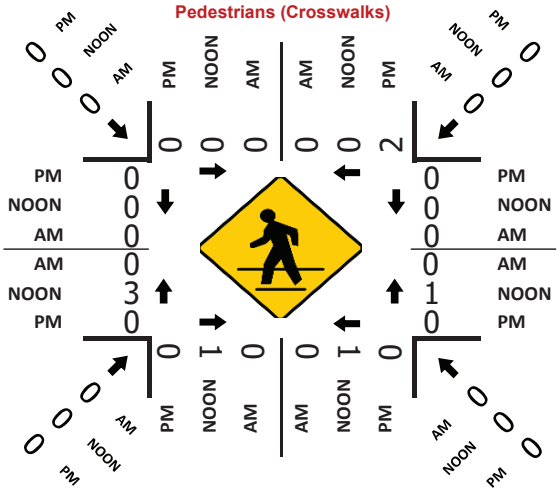
Bikes (NOON)



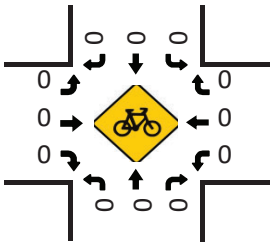
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Turner Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-014
City: Vallejo

Day: Thursday
Date: 11/09/2017

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	04:45 PM - 05:45 PM

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

Plaza Dr — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	256	0	243	0	453	NOON
PM	228	0	326	1	467	PM

Turner Pkwy — EASTBOUND

AM	NOON	PM	
0	352	318	⇦
0	0	0	↶ 0
0	227	211	↱ 0
0	76	108	→ 0
0	0	0	↴ 0
AM	NOON	PM	

WESTBOUND — Turner Pkwy

PM	NOON	AM	
255	226	0	↰ 0
90	96	0	← 0
0	0	0	↶ 0
0	0	0	↶ 0
434	319	0	⇨
PM	NOON	AM	

CONTROL

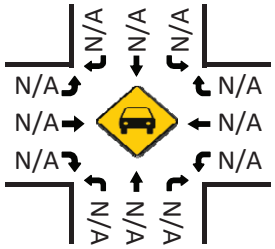
0

		AM	NOON	PM
TEV		0	1124	1219
PHF			0.90	0.93

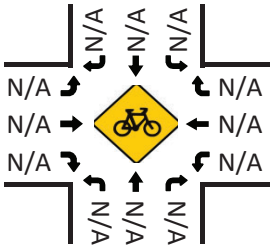
NORTHBOUND — Plaza Dr

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

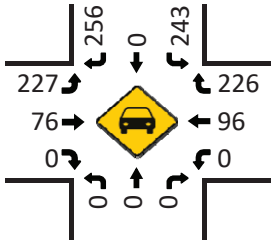
Total Vehicles (AM)



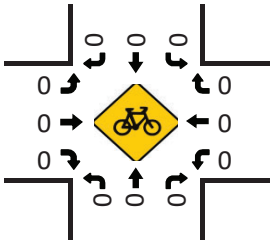
Bikes (AM)



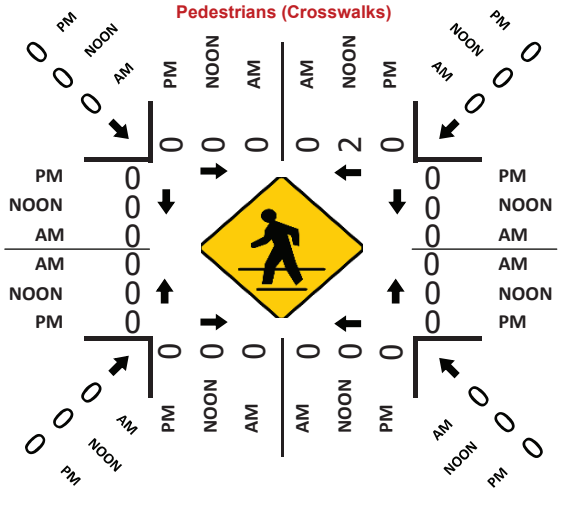
Total Vehicles (Noon)



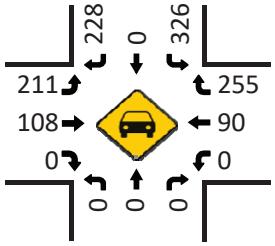
Bikes (NOON)



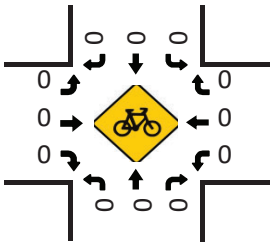
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Columbus Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-001
City: Vallejo

Day: Saturday
Date: 11/11/2017

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	NONE

SOUTHBOUND — Admiral Callaghan Ln

AM	0	0	0	0	0	AM
NOON	3	1	0	0	-16	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Columbus Pkwy

AM	NOON	PM
0	1536	0
0	18	0
0	-16	0
0	449	0
0	1174	0

WESTBOUND — Columbus Pkwy

PM	NOON	AM
0	0	0
0	547	0
0	215	0
0	0	0
0	756	0

CONTROL

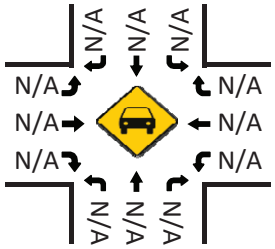
0

	AM	NOON	PM
TEV	0	3666	0
PHF		0.98	

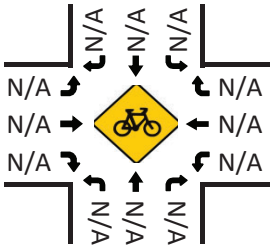
NORTHBOUND — Admiral Callaghan Ln

PM	0	0	0	0	0	PM
NOON	1390	0	968	0	307	NOON
AM	0	0	0	0	0	AM

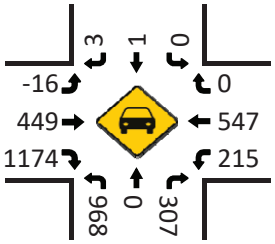
Total Vehicles (AM)



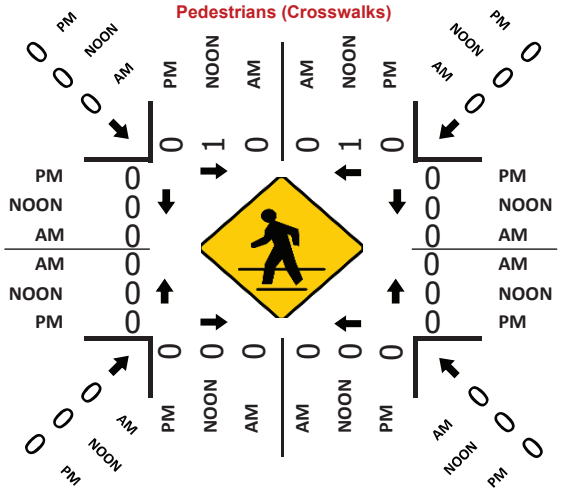
Bikes (AM)



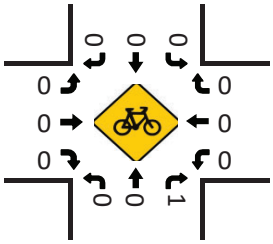
Total Vehicles (Noon)



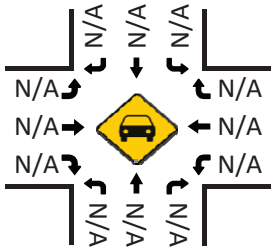
Pedestrians (Crosswalks)



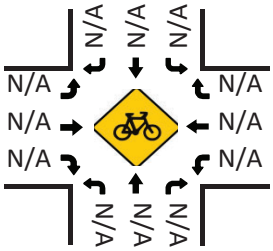
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Auto Club Way & Admiral Callaghan Ln

Peak Hour Turning Movement Count

ID: 17-07956-002
City: Vallejo

Day: Saturday
Date: 11/11/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:00 PM - 02:00 PM	12:00 PM - 02:00 PM
NONE	NONE

Auto Club Way — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	90	11	112	0	131	NOON
PM	0	0	0	0	0	PM

Admiral Callaghan Ln — EASTBOUND

AM	NOON	PM
0	1116	0
0	0	0
0	78	0
0	951	0
0	63	0

Admiral Callaghan Ln — WESTBOUND

PM	NOON	AM
0	38	0
0	993	0
0	293	0
0	6	0
0	1220	0

CONTROL

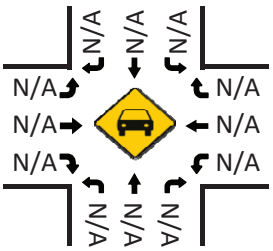
0

TEV	0 AM	2834 NOON	0 PM
PHF		0.98	

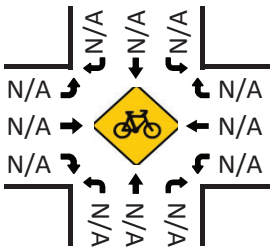
Auto Club Way — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	367	0	33	15	151	NOON
AM	0	0	0	0	0	AM

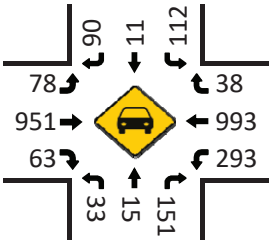
Total Vehicles (AM)



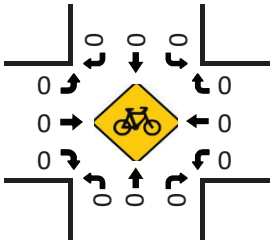
Bikes (AM)



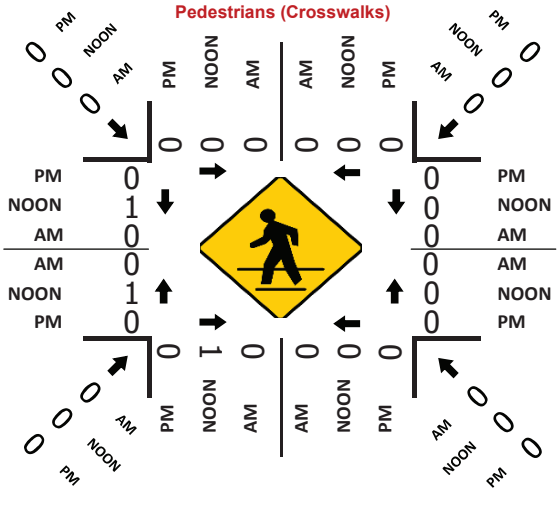
Total Vehicles (Noon)



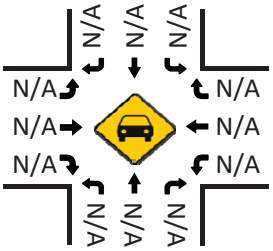
Bikes (NOON)



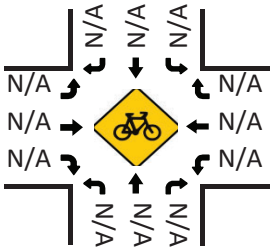
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Admiral Callaghan Ln

Peak Hour Turning Movement Count

ID: 17-07956-003
City: Vallejo

Day: Saturday
Date: 11/11/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:30 PM - 01:30 PM	12:00 PM - 02:00 PM
NONE	NONE

SOUTHBOUND (Plaza Dr)

AM	0	0	0	0	0	AM
NOON	107	103	159	0	403	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Admiral Callaghan Ln)

AM	NOON	PM
0	632	0
0	0	0
0	131	0
0	492	0
0	133	0

WESTBOUND (Admiral Callaghan Ln)

PM	NOON	AM
0	205	0
0	398	0
0	515	0
0	0	0
0	1117	0

NORTHBOUND (Plaza Dr)

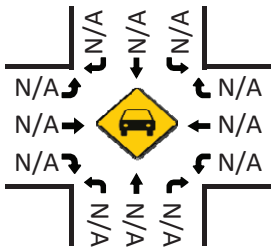
PM	0	0	0	0	0	PM
NOON	751	0	127	67	466	NOON
AM	0	0	0	0	0	AM

CONTROL

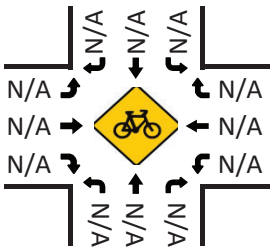
0

	AM	NOON	PM
TEV	0	2903	0
PHF		0.96	

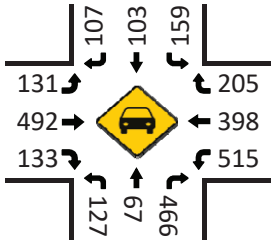
Total Vehicles (AM)



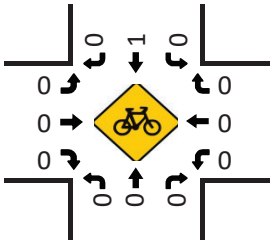
Bikes (AM)



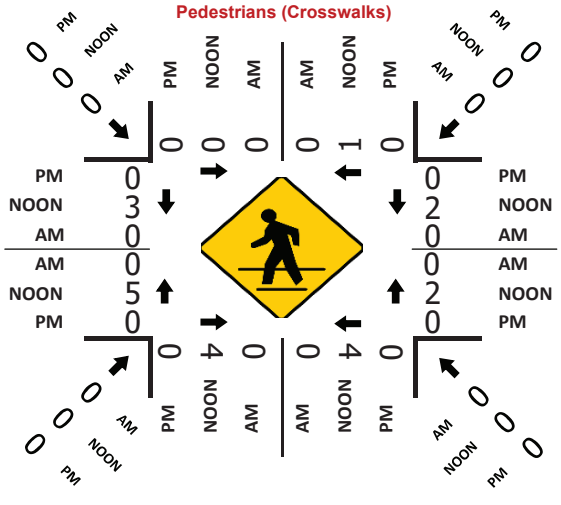
Total Vehicles (Noon)



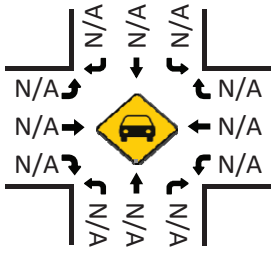
Bikes (NOON)



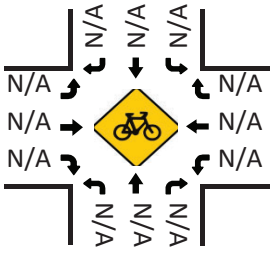
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Target Dwy

Peak Hour Turning Movement Count

ID: 17-07956-004
City: Vallejo

Day: Saturday
Date: 11/11/2017

PEAK HOURS

AM	NONE
NOON	12:15 PM - 01:15 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	NONE

Admiral Callaghan Ln — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	435	99	0	522	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Target Dwy

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

WESTBOUND — Target Dwy

PM	NOON	AM
0	130	0
0	0	0
0	240	0
0	0	0
0	304	0

CONTROL

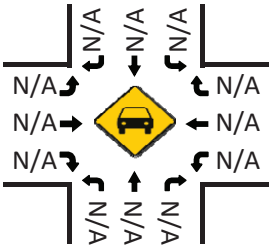
0

	AM	NOON	PM
TEV	0	1501	0
PHF		0.94	

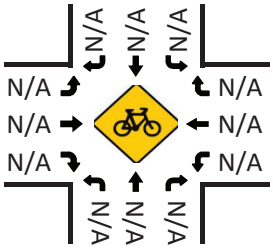
Admiral Callaghan Ln — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	675	0	0	392	205	NOON
AM	0	0	0	0	0	AM

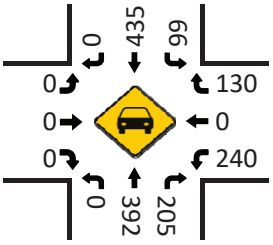
Total Vehicles (AM)



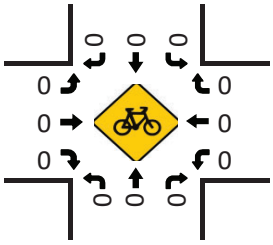
Bikes (AM)



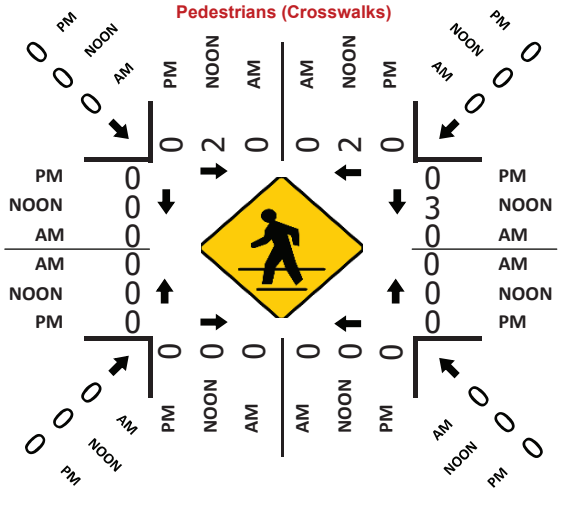
Total Vehicles (Noon)



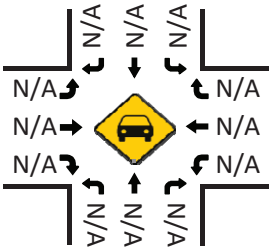
Bikes (NOON)



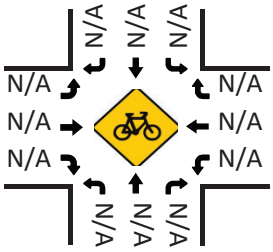
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Target Right Turn Only Dwy

Peak Hour Turning Movement Count

ID: 17-07956-005
City: Vallejo

Day: Saturday
Date: 11/11/2017

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	12:15 PM - 01:15 PM	12:00 PM - 02:00 PM
PM	NONE	NONE

Admiral Callaghan Ln — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	0	673	0	0	605
PM	0	0	0	0	0
	0	0	0	0	

Target Right Turn Only Dwy — EASTBOUND

	AM	NOON	PM	
Departing	0	0	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Through	0	0	0	0
Right	0	0	0	0

Target Right Turn Only Dwy — WESTBOUND

		PM	NOON	AM
Right	0	0	16	0
Through	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	45	0

Admiral Callaghan Ln — NORTHBOUND

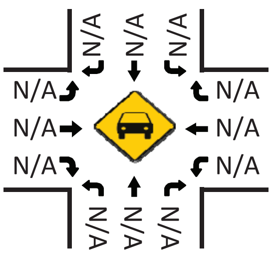
	Departing	U-Turn	Left	Through	Right
		0	0	0	0
PM	0	0	0	0	0
NOON	673	0	0	589	45
AM	0	0	0	0	0

CONTROL

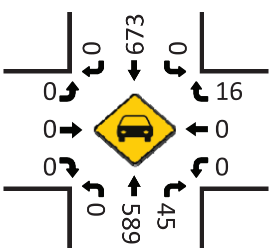
0

	AM	NOON	PM
TEV	0	1323	0
PHF		0.98	

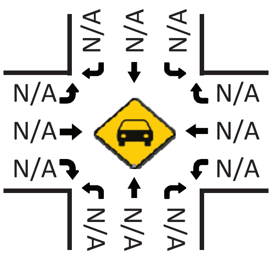
Total Vehicles (AM)



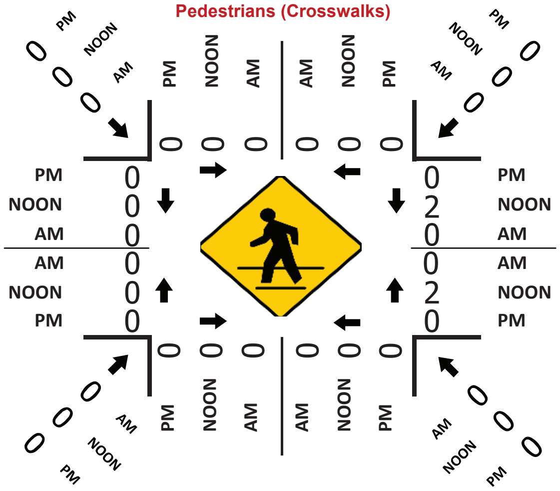
Total Vehicles (Noon)



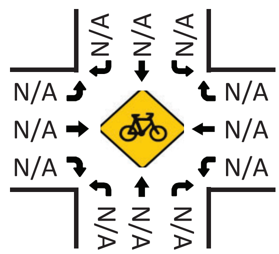
Total Vehicles (PM)



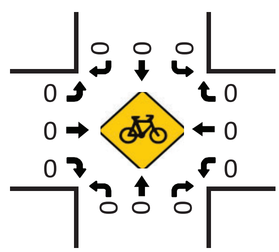
Pedestrians (Crosswalks)



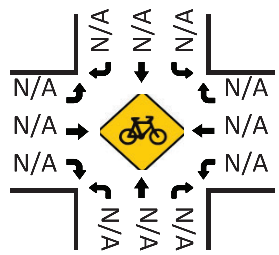
Bikes (AM)



Bikes (NOON)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Turner Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-006
City: Vallejo

Day: Saturday
Date: 11/11/2017

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
PM	NONE	NONE

Admiral Callaghan Ln — SOUTHBOUND

	↲	↓	↳	U	⇧	
AM	0	0	0	0	0	AM
NOON	0	586	89	0	601	NOON
PM	0	0	0	0	0	PM
	0	0	0	0		

Turner Pkwy — WESTBOUND

		PM	NOON	AM
0	↰	0	32	0
0	←	0	0	0
0	↙	0	464	0
0	U	0	22	0
	⇨	0	436	0

Turner Pkwy — EASTBOUND

AM	NOON	PM		
0	0	0	⇦	
0	0	0	U	0
0	0	0	↱	0
0	0	0	→	0
0	0	0	↴	0

Admiral Callaghan Ln — NORTHBOUND

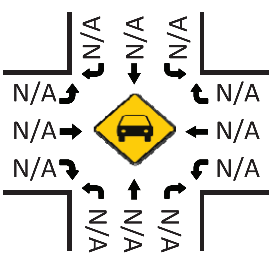
	⇩	U	↰	↑	↱	
		0	0	0	0	
PM	0	0	0	0	0	PM
NOON	1050	0	0	569	325	NOON
AM	0	0	0	0	0	AM

CONTROL

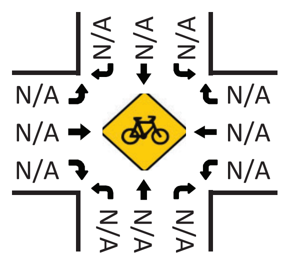
0

	AM	NOON	PM
TEV	0	2087	0
PHF		0.96	

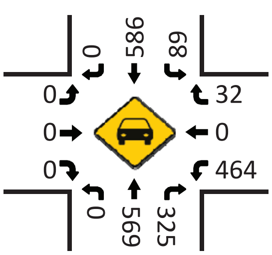
Total Vehicles (AM)



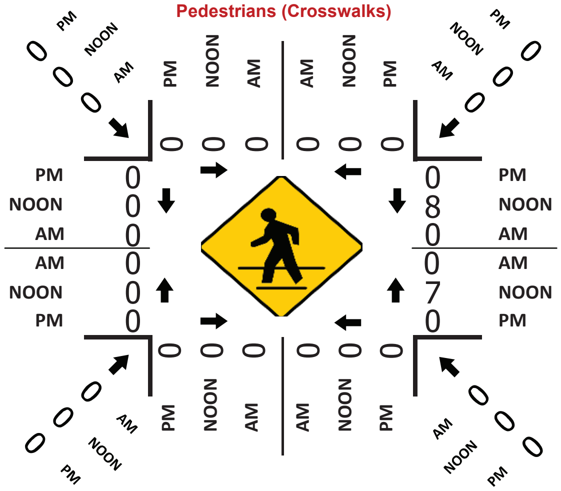
Bikes (AM)



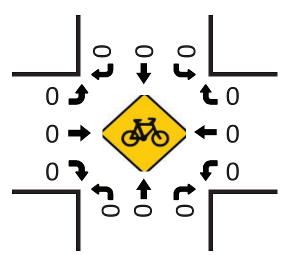
Total Vehicles (Noon)



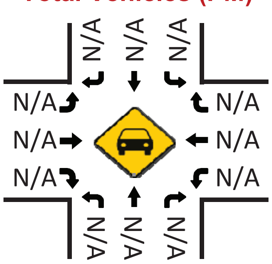
Pedestrians (Crosswalks)



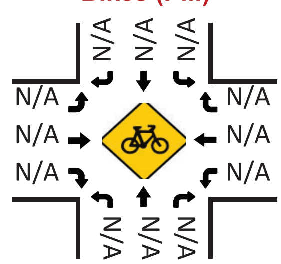
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Gateway Plaza

Peak Hour Turning Movement Count

ID: 17-07956-012
City: Vallejo

Day: Saturday
Date: 11/11/2017

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	01:00 PM - 02:00 PM	12:00 PM - 02:00 PM
PM	NONE	NONE

Plaza Dr — SOUTHBOUND

	Right	Through	Left	U-turn	Out
AM	0	0	0	0	0
NOON	167	246	218	0	682
PM	0	0	0	0	0
	0	0	0	0	

Gateway Plaza — EASTBOUND

	AM	NOON	PM	
Out	0	313	0	
U-turn	0	0	0	0
Left	0	167	0	0
Through	0	64	0	0
Right	0	133	0	0

Gateway Plaza — WESTBOUND

		PM	NOON	AM
Right	0	0	255	0
Through	0	0	81	0
Left	0	0	155	0
U-turn	0	0	0	0
Out		0	330	0

Plaza Dr — NORTHBOUND

	Out	U-turn	Left	Through	Right
		0	0	0	0
PM	0	0	0	0	0
NOON	534	0	65	260	48
AM	0	0	0	0	0

CONTROL

0

	AM	NOON	PM
TEV	0	1859	0
PHF		0.98	

Total Vehicles (AM)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Total Vehicles (Noon)

Approach	Values
Southbound	167, 246, 218
Eastbound	167, 64, 133
Westbound	255, 81, 155
Northbound	65, 260, 48

Total Vehicles (PM)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (AM)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Bikes (NOON)

Approach	Left	Through	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	0	0

Bikes (PM)

Approach	Left	Through	Right
Southbound	N/A	N/A	N/A
Eastbound	N/A	N/A	N/A
Westbound	N/A	N/A	N/A
Northbound	N/A	N/A	N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (west half)	0	0	0
North (east half)	0	0	0
West (north half)	0	2	0
West (south half)	0	0	0
East (north half)	0	0	0
East (south half)	0	3	0
South (west half)	0	0	0
South (east half)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Plaza Dr & Costco Dwy

Peak Hour Turning Movement Count

ID: 17-07956-013
City: Vallejo

Day: Saturday
Date: 11/11/2017

PEAK HOURS	COUNT PERIODS
NONE	NONE
12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
NONE	NONE

SOUTHBOUND (Plaza Dr)

AM	0	0	0	0	0	AM
NOON	63	344	120	0	349	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Costco Dwy)

AM	NOON	PM	
0	146	0	
0	0	0	0
0	25	0	0
0	29	0	0
0	85	0	0

WESTBOUND (Costco Dwy)

PM	NOON	AM	
0	138	0	0
0	25	0	0
0	189	0	0
0	1	0	0
0	467	0	

NORTHBOUND (Plaza Dr)

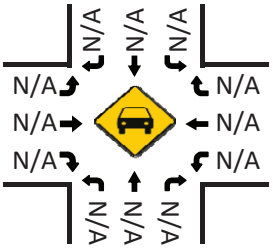
PM	0	0	0	0	0	PM
NOON	618	0	58	186	317	NOON
AM	0	0	0	0	0	AM

CONTROL

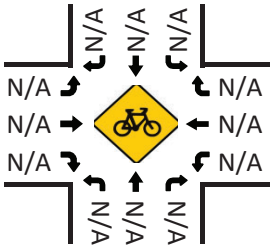
0

	AM	NOON	PM
TEV	0	1580	0
PHF		0.98	

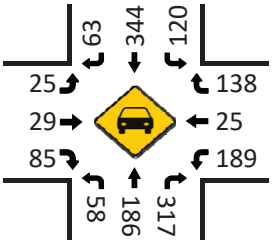
Total Vehicles (AM)



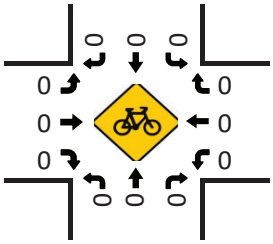
Bikes (AM)



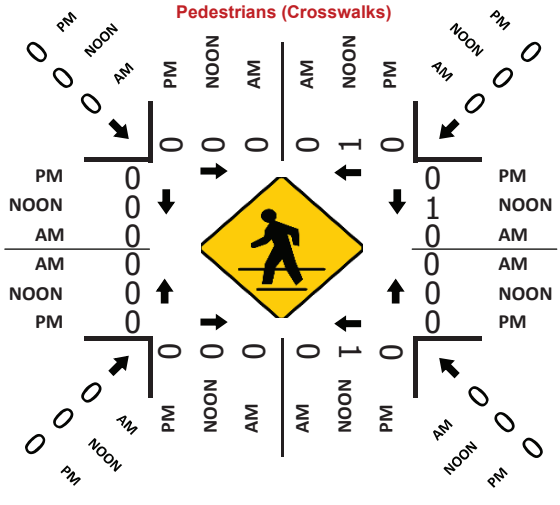
Total Vehicles (Noon)



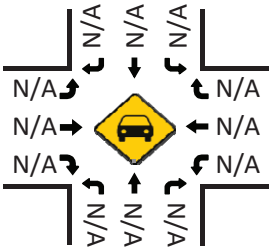
Bikes (NOON)



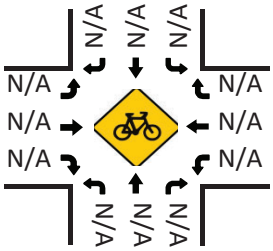
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Turner Pkwy

Peak Hour Turning Movement Count

ID: 17-07956-014
City: Vallejo

Day: Saturday
Date: 11/11/2017

	PEAK HOURS	COUNT PERIODS
AM	NONE	NONE
NOON	12:45 PM - 01:45 PM	12:00 PM - 02:00 PM
PM	NONE	NONE

Plaza Dr – SOUTHBOUND

					Exiting
AM	0	0	0	0	0
NOON	324	0	305	0	564
PM	0	0	0	0	0
	0	0	0	0	

Turner Pkwy – EASTBOUND

	AM	NOON	PM	
Exiting	0	432	0	
U-turn	0	0	0	0
Left	0	247	0	0
Through	0	94	0	0
Right	0	0	0	0

Turner Pkwy – WESTBOUND

		PM	NOON	AM
	0	0	317	0
	0	0	108	0
	0	0	0	0
	0	0	0	0
Exiting		0	399	0

Plaza Dr – NORTHBOUND

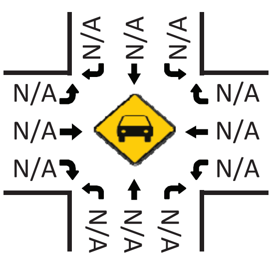
	Exiting				
		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

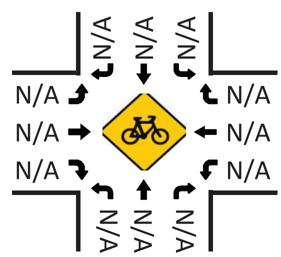
0

	AM	NOON	PM
TEV	0	1395	0
PHF		0.94	

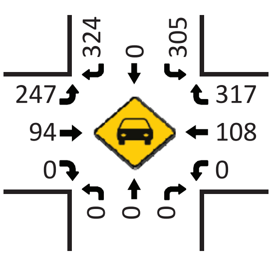
Total Vehicles (AM)



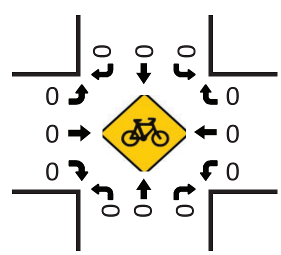
Bikes (AM)



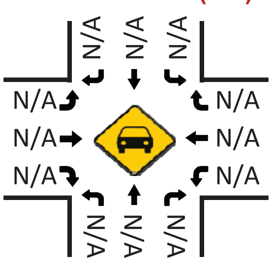
Total Vehicles (Noon)



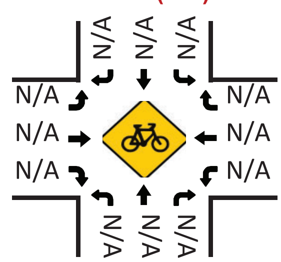
Bikes (NOON)



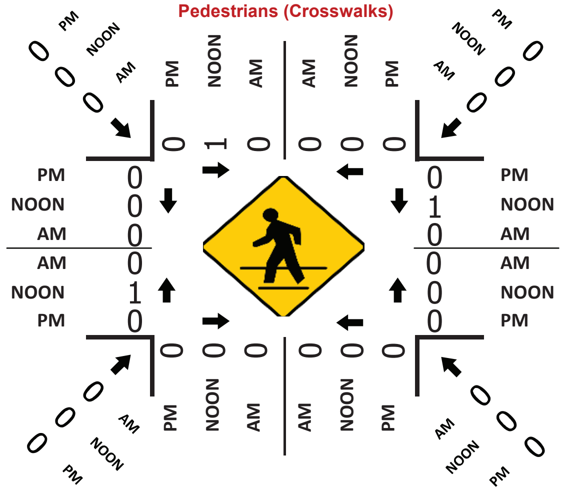
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Foothill Dr & Turner Pkwy

Peak Hour Turning Movement Count

ID: 18-08655-001
City: Vallejo

Day: Thursday
Date: 12/06/2018

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	12:00 PM - 01:00 PM	11:00 AM - 01:00 PM
PM	04:15 PM - 05:15 PM	04:00 PM - 06:00 PM

Foothill Dr – SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
Bikes	0	0	0	0	

Turner Pkwy – WESTBOUND

	PM	NOON	AM	Bikes
U-Turn	0	0	0	0
Through	486	416	150	2
Left	0	0	0	0
U-Turn	0	0	0	0
Departing	466	405	195	

Turner Pkwy – EASTBOUND

	AM	NOON	PM	Bikes
Departing	172	450	514	
U-Turn	0	0	0	0
Left	0	0	0	0
Through	124	291	325	2
Right	23	44	55	0

Foothill Dr – NORTHBOUND

	Departing	U-Turn	Left	Through	Right
PM	55	0	28	0	141
NOON	44	0	34	0	114
AM	23	0	22	0	71
Bikes		0	0	1	0

CONTROL

1-Way Stop (NB)

	AM	NOON	PM
TEV	390	899	1035
PHF	0.91	0.91	0.97

Cars (AM)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound (U-turn 0)	0	146	0
Eastbound (U-turn 0)	0	122	22
Northbound	21	0	70

Cars (NOON)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound (U-turn 0)	0	412	0
Eastbound (U-turn 0)	0	288	44
Northbound	34	0	114

Cars (PM)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound (U-turn 0)	0	482	0
Eastbound (U-turn 0)	0	325	54
Northbound	27	0	140

HT (AM)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound (U-turn 0)	0	4	0
Eastbound (U-turn 0)	0	2	1
Northbound	1	0	1

HT (NOON)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound (U-turn 0)	0	4	0
Eastbound (U-turn 0)	0	3	0
Northbound	0	0	0

HT (PM)

Approach	Left	Through	Right
Southbound	0	0	0
Westbound (U-turn 0)	0	4	0
Eastbound (U-turn 0)	0	0	1
Northbound	1	0	1

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	Eastbound	0	0	0
North	Westbound	0	0	0
West	Southbound	0	0	0
West	Northbound	0	0	0
East	Southbound	0	0	0
East	Northbound	3	2	0
South	Eastbound	2	0	0
South	Westbound	3	1	3
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Foothill Dr & Turner Pkwy

Peak Hour Turning Movement Count

ID: 18-08655-001
City: Vallejo

Day: Saturday
Date: 12/08/2018

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:00 PM - 02:00 PM	11:00 AM - 02:00 PM
NONE	NONE

SOUTHBOUND — Foothill Dr

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Turner Pkwy

AM	NOON	PM	
0	656	0	
0	0	0	0
0	0	0	0
0	382	0	2
0	66	0	0
AM	NOON	PM	

WESTBOUND — Turner Pkwy

PM	NOON	AM	
0	0	0	0
0	608	0	2
0	0	0	0
0	0	0	0
0	518	0	
PM	NOON	AM	

NORTHBOUND — Foothill Dr

PM	0	0	0	0	0	PM
NOON	66	0	48	0	136	NOON
AM	0	0	0	0	0	AM

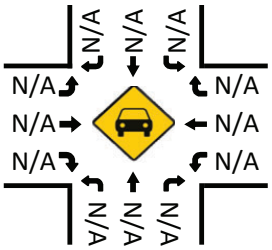
	0	0	0	0
	0	0	1	0

CONTROL

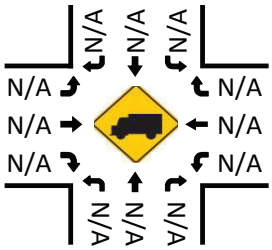
1-Way Stop (NB)

	AM	NOON	PM
TEV	0	1240	0
PHF		0.97	

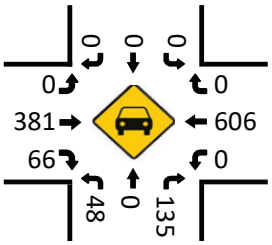
Cars (AM)



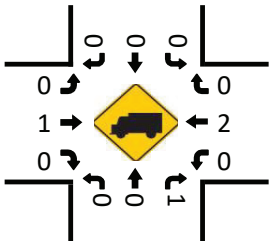
HT (AM)



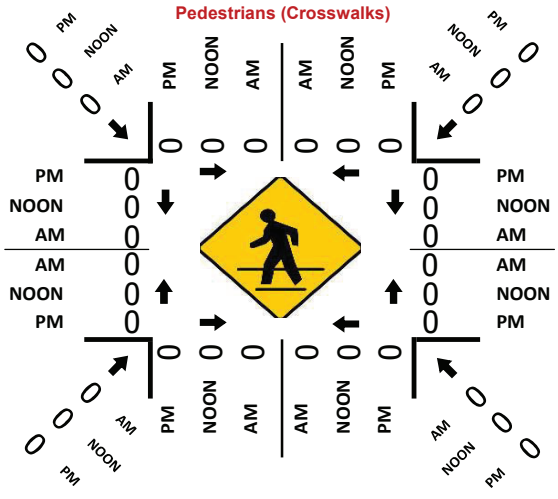
Cars (NOON)



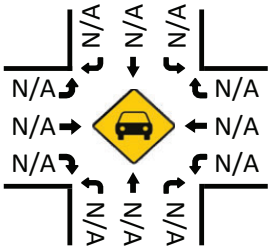
HT (NOON)



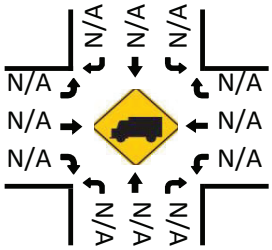
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-001
City: Vallejo

Day: Saturday
Date: 07/20/2019

PEAK HOURS	COUNT PERIODS
NONE	NONE
01:00 PM - 02:00 PM	12:00 PM - 02:00 PM
NONE	NONE

Admiral Callaghan Ln — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	1175	0	204	0	1325	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Redwood Pkwy

AM	NOON	PM	
0	1636	0	
0	0	0	0
0	654	0	2
0	360	0	2
0	0	0	0
AM	NOON	PM	

WESTBOUND — Redwood Pkwy

PM	NOON	AM	
0	348	0	0
0	459	0	2
0	0	0	0
0	0	0	0
0	656	0	
PM	NOON	AM	

CONTROL

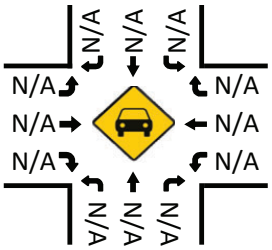
Signalized

	AM	NOON	PM
TEV	0	3617	0
PHF		0.97	

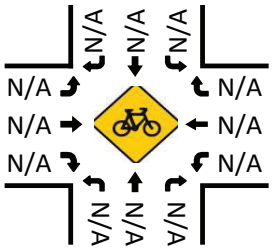
Admiral Callaghan Ln — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	2	323	92	NOON
AM	0	0	0	0	0	AM

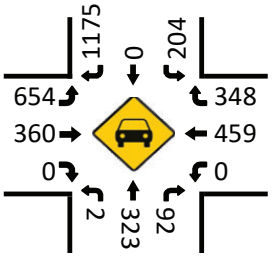
Total Vehicles (AM)



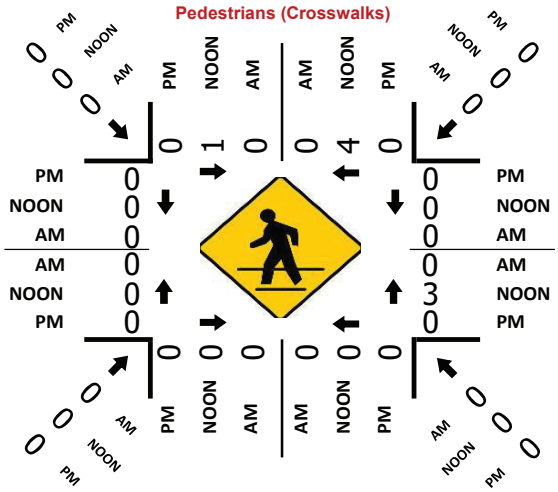
Bikes (AM)



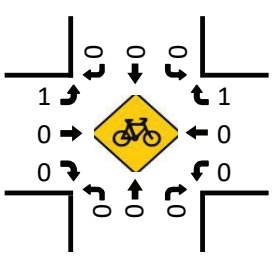
Total Vehicles (Noon)



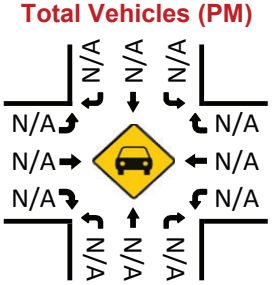
Pedestrians (Crosswalks)



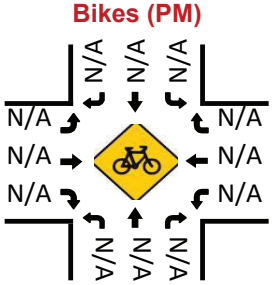
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Ascot Pkwy & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-002
City: Vallejo

Day: Saturday
Date: 07/20/2019

PEAK HOURS

AM	NOON	PM
NONE	01:00 PM - 02:00 PM	NONE

COUNT PERIODS

AM	NOON	PM
NONE	12:00 PM - 02:00 PM	NONE

Ascot Pkwy

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	141	240	31	0	439	NOON
PM	0	0	0	0	0	PM
	0.5	1.5	1	0		

EASTBOUND (Redwood Pkwy)

AM	NOON	PM	
0	372	0	
0	0	0	0
0	142	0	1
0	150	0	1.5
0	143	0	0.5

CONTROL

Signalized

	AM	NOON	PM
TEV	0	1455	0
PHF		0.96	

WESTBOUND (Redwood Pkwy)

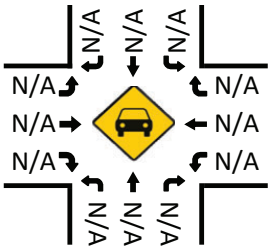
PM	NOON	AM	
0	53	0	0.5
0	114	0	1.5
0	32	0	1
0	1	0	0
0	229	0	

	0	1	1.5	0.5		
PM	0	0	0	0	0	PM
NOON	415	0	117	244	47	NOON
AM	0	0	0	0	0	AM

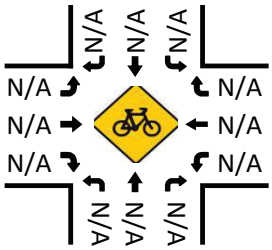
NORTHBOUND

Ascot Pkwy

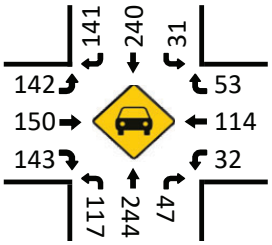
Total Vehicles (AM)



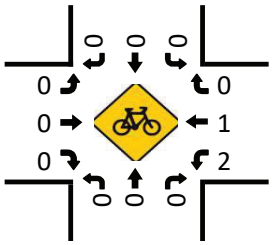
Bikes (AM)



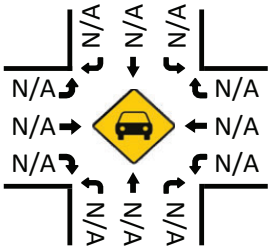
Total Vehicles (Noon)



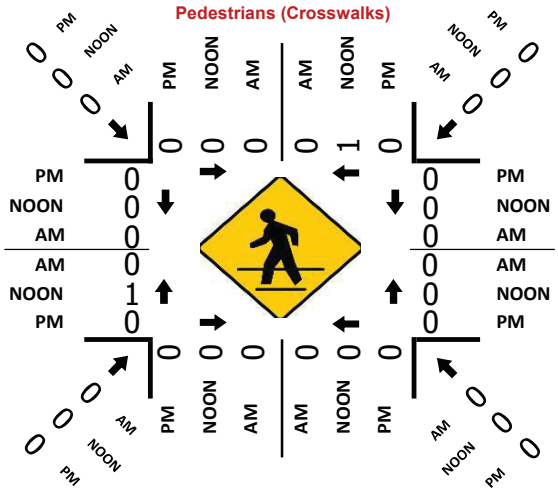
Bikes (NOON)



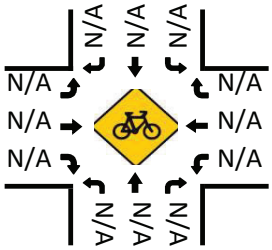
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Oakwood Ave & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-003
City: Vallejo

Day: Saturday
Date: 07/20/2019

PEAK HOURS

AM	NONE
NOON	01:00 PM - 02:00 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	NONE

Oakwood Ave — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Redwood Pkwy — EASTBOUND

AM	NOON	PM	
0	339	0	
0	0	0	0
0	0	0	0
0	235	0	2
0	114	0	0

WESTBOUND — Redwood Pkwy

PM	NOON	AM	
0	0	0	0
0	218	0	2
0	146	0	1
0	1	0	0
0	439	0	

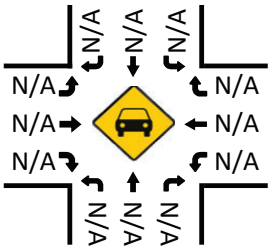
NORTHBOUND — Oakwood Ave

PM	0	0	0	0	0	PM
NOON	267	7	121	0	203	NOON
AM	0	0	0	0	0	AM

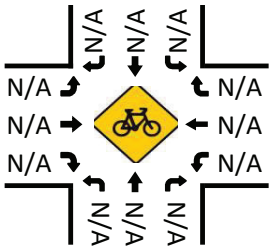
CONTROL: Signalized

	AM	NOON	PM
TEV	0	1045	0
PHF		0.94	

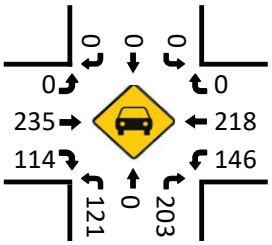
Total Vehicles (AM)



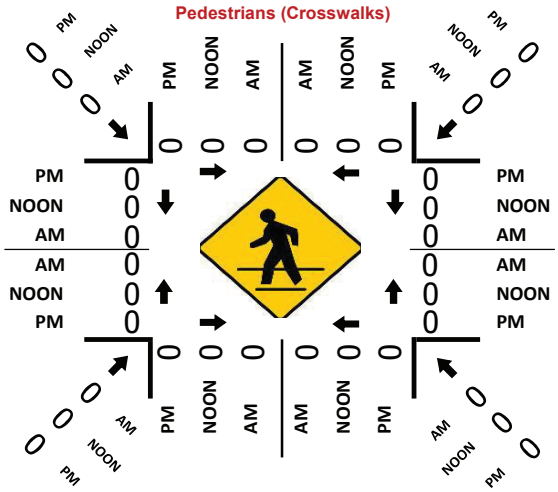
Bikes (AM)



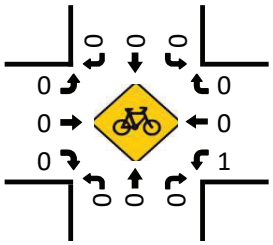
Total Vehicles (Noon)



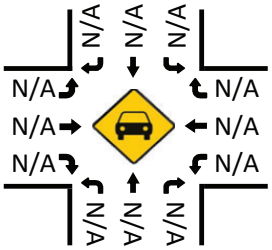
Pedestrians (Crosswalks)



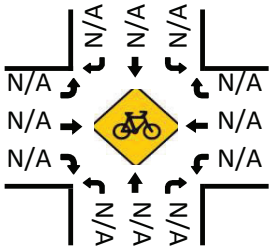
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Foothill Dr & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-004
City: Vallejo

Day: Saturday
Date: 07/20/2019

PEAK HOURS

AM	NONE
NOON	12:30 PM - 01:30 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	12:00 PM - 02:00 PM
PM	NONE

Foothill Dr — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	36	0	43	0	171	NOON
PM	0	0	0	0	0	PM

Redwood Pkwy — EASTBOUND

AM	NOON	PM		
0	366	0		
0	0	0	0	
0	107	0	1	
0	332	0	2	
0	0	0	0	
AM	NOON	PM		

CONTROL

2-Way Stop (NB/SB)

	AM	NOON	PM
TEV	0	914	0
PHF		0.95	

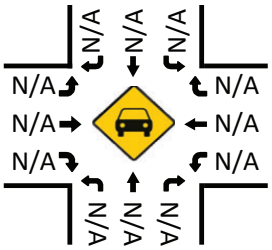
WESTBOUND — Redwood Pkwy

PM	NOON	AM	
0	63	0	0
0	325	0	2
0	0	0	0
0	1	0	0
0	377	0	
PM	NOON	AM	

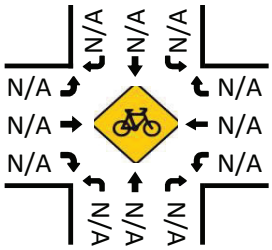
Foothill Dr — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	5	1	1	NOON
AM	0	0	0	0	0	AM

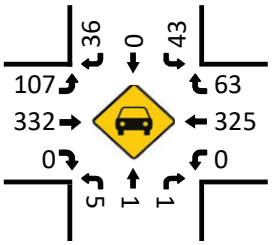
Total Vehicles (AM)



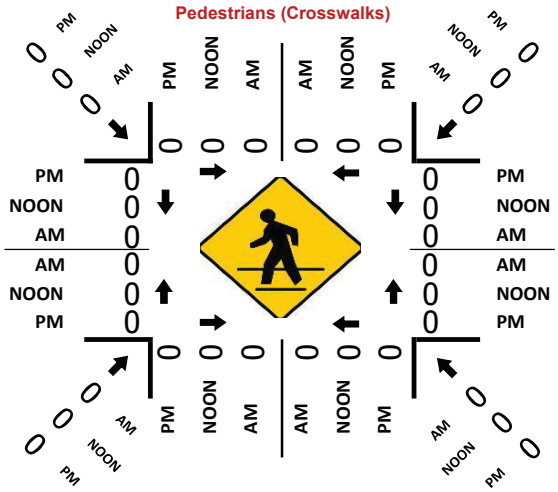
Bikes (AM)



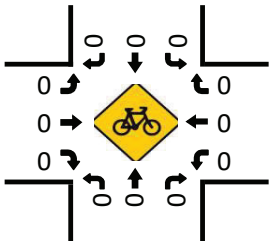
Total Vehicles (Noon)



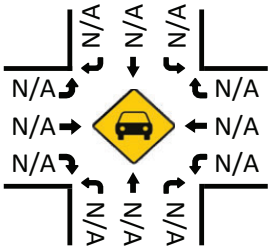
Pedestrians (Crosswalks)



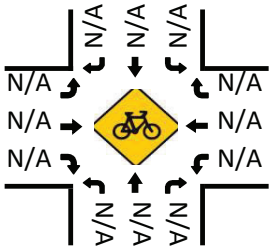
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-001
City: Vallejo

Day: Tuesday
Date: 07/23/2019

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	12:45 PM - 01:45 PM
PM	04:30 PM - 05:30 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

Admiral Callaghan Ln — SOUTHBOUND

AM	818	0	47	0	509
NOON	1163	0	148	0	1046
PM	1072	0	186	1	1112

Redwood Pkwy — EASTBOUND

AM	NOON	PM		
1214	1537	1410		
0	0	0	0	
239	533	574	2	
194	357	481	2	
0	0	0	0	
AM	NOON	PM		

Redwood Pkwy — WESTBOUND

PM	NOON	AM	
205	195	125	0
335	372	393	2
0	0	0	0
0	0	0	0
794	613	299	
PM	NOON	AM	

Admiral Callaghan Ln — NORTHBOUND

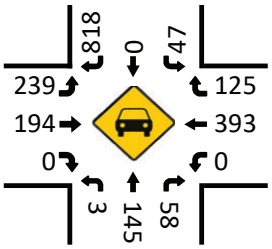
PM	0	0	3	332	127
NOON	0	0	2	318	108
AM	0	0	3	145	58

CONTROL

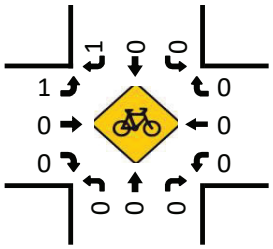
Signalized

	AM	NOON	PM
TEV	2022	3196	3316
PHF	0.92	0.92	0.97

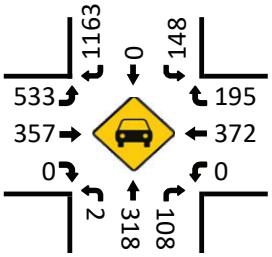
Total Vehicles (AM)



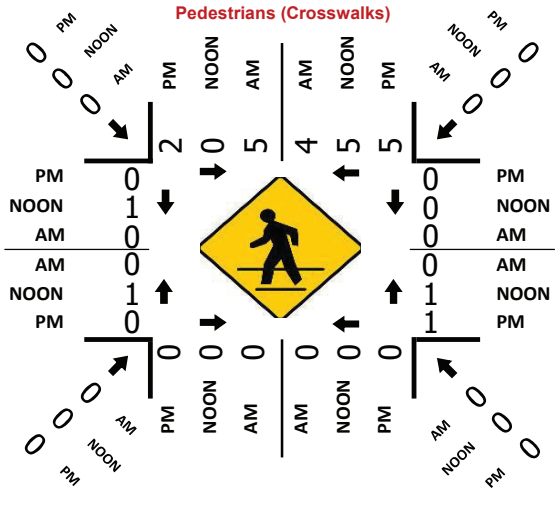
Bikes (AM)



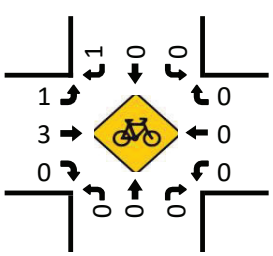
Total Vehicles (Noon)



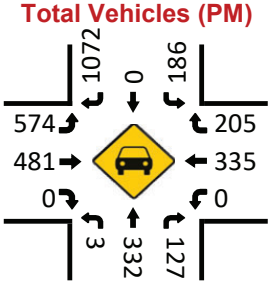
Pedestrians (Crosswalks)



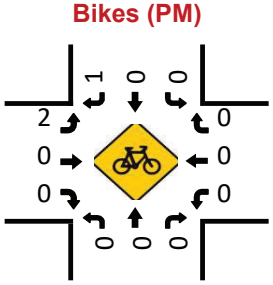
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Ascot Pkwy & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-002
City: Vallejo

Day: Tuesday
Date: 07/23/2019

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	01:00 PM - 02:00 PM	12:00 PM - 02:00 PM
PM	05:00 PM - 06:00 PM	04:00 PM - 06:00 PM

Ascot Pkwy – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	55	81	11	0	145
NOON	136	213	39	0	264
PM	150	247	32	0	350
Lanes	0.5	1.5	1	0	

Redwood Pkwy – EASTBOUND

	AM	NOON	PM	Lanes
Departing	292	359	397	
U-Turn	0	0	0	0
Left	41	83	127	1
Thru	62	107	152	1.5
Right	68	116	160	0.5

Redwood Pkwy – WESTBOUND

	PM	NOON	AM	Lanes
Right	30	33	21	0.5
Thru	109	113	135	1.5
Left	41	49	43	1
U-Turn	0	2	0	0
Departing	248	191	96	

Ascot Pkwy – NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Lanes		0	1	1.5	0.5
PM	448	0	138	193	64
NOON	378	0	110	148	43
AM	192	0	102	83	23

CONTROL

Signalized

	AM	NOON	PM
TEV	725	1192	1443
PHF	0.91	0.95	0.97

Total Vehicles

Approach / Movement	AM	Noon	PM
SB Right	55	136	150
SB Thru	81	213	247
SB Left	11	39	32
EB Left	41	83	127
EB Thru	62	107	152
EB Right	68	116	160
WB Right	21	33	30
WB Thru	135	113	109
WB Left	43	49	41
NB Left	102	110	138
NB Thru	83	148	193
NB Right	23	43	64

Bikes

Approach / Movement	AM	NOON	PM
SB Right	0	0	0
SB Thru	0	0	0
SB Left	0	0	0
EB Left	0	0	0
EB Thru	0	0	0
EB Right	0	1	0
WB Right	0	0	0
WB Thru	0	1	0
WB Left	1	0	0
NB Left	0	0	0
NB Thru	0	0	0
NB Right	1	0	0

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North (westward)	0	0	0
North (eastward)	0	0	2
West (southward)	0	0	0
West (northward)	0	1	0
East (southward)	1	0	0
East (northward)	0	0	0
South (eastward)	1	0	0
South (westward)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Oakwood Ave & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-003
City: Vallejo

Day: Tuesday
Date: 07/23/2019

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	12:45 PM - 01:45 PM
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

Oakwood Ave

SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Redwood Pkwy — EASTBOUND

AM	NOON	PM		
271	325	359	⇦	
0	0	0	↶	0
0	0	0	↱	0
117	194	262	→	2
38	105	124	↴	0
AM	NOON	PM		

WESTBOUND — Redwood Pkwy

PM	NOON	AM		
				0
0	0	0	↰	0
235	211	220	←	2
161	140	72	↰	1
0	0	0	↶	0
452	297	171	⇨	
PM	NOON	AM		

CONTROL: Signalized

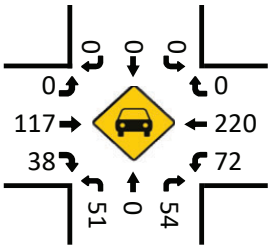
TEV	552	867	1101
	AM	NOON	PM
PHF	0.91	0.97	0.97

NORTHBOUND

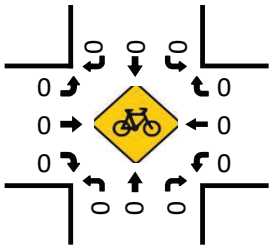
PM	290	5	124	0	190	PM
NOON	245	0	114	0	103	NOON
AM	110	0	51	0	54	AM
		0	1	0	1	

Oakwood Ave

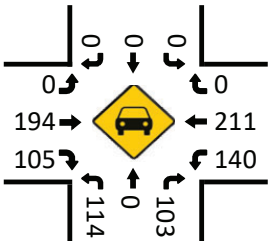
Total Vehicles (AM)



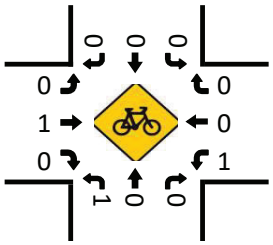
Bikes (AM)



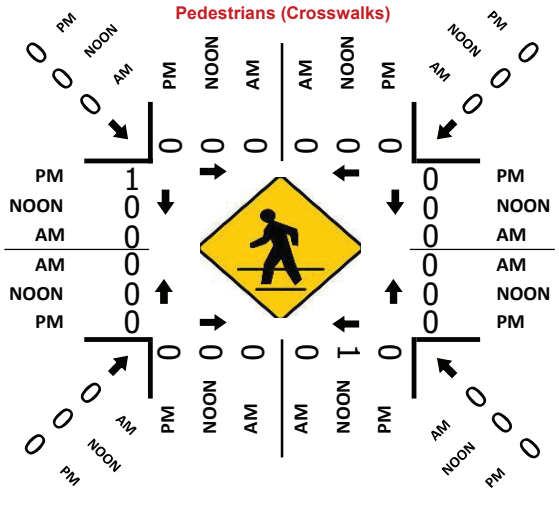
Total Vehicles (Noon)



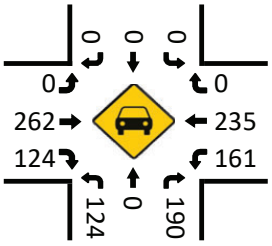
Bikes (NOON)



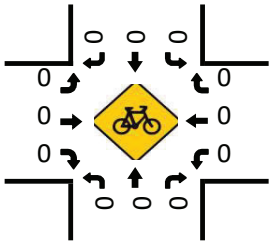
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Foothill Dr & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08392-004
City: Vallejo

Day: Tuesday
Date: 07/23/2019

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	12:45 PM - 01:45 PM
PM	05:00 PM - 06:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	12:00 PM - 02:00 PM
PM	04:00 PM - 06:00 PM

Foothill Dr — SOUTHBOUND

AM	34	0	18	0	45	AM
NOON	30	0	32	0	105	NOON
PM	32	0	49	0	148	PM

Redwood Pkwy — EASTBOUND

AM	NOON	PM		
374	352	319	⇦	
1	1	0	↰	0
22	67	91	↱	1
141	294	380	→	2
0	0	0	↱	0
AM	NOON	PM		

CONTROL

2-Way Stop (NB/SB)

	AM	NOON	PM
TEV	580	786	898
PHF	0.86	0.93	0.96

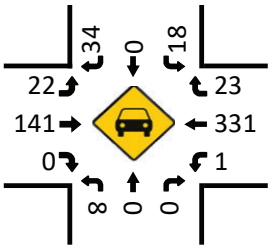
WESTBOUND — Redwood Pkwy

PM	NOON	AM		
57	37	23	↰	0
281	317	331	←	2
0	0	1	↰	0
0	1	1	↰	0
431	329	160	⇨	
PM	NOON	AM		

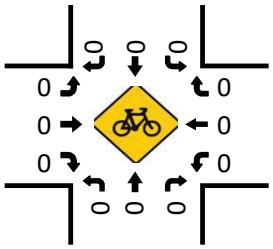
NORTHBOUND — Foothill Dr

PM	0	0	6	0	2	PM
NOON	0	0	4	1	2	NOON
AM	1	0	8	0	0	AM

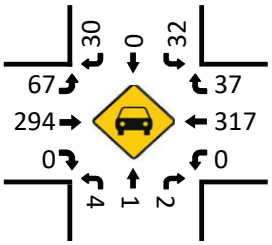
Total Vehicles (AM)



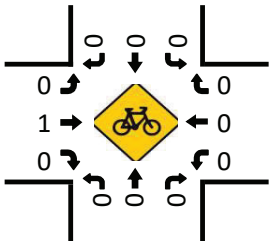
Bikes (AM)



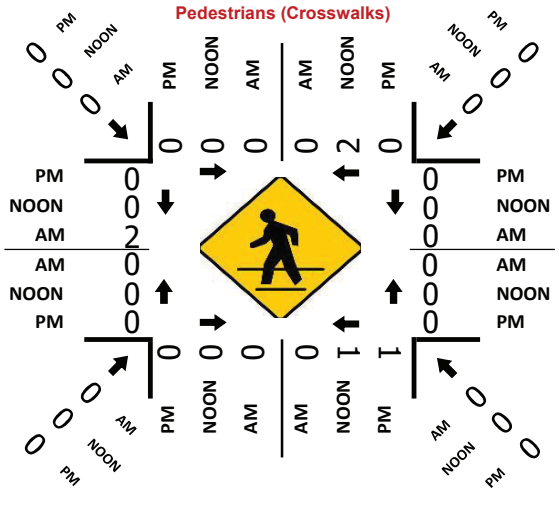
Total Vehicles (Noon)



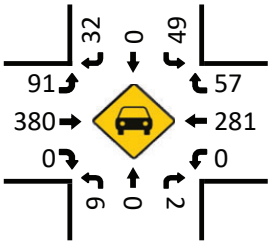
Bikes (NOON)



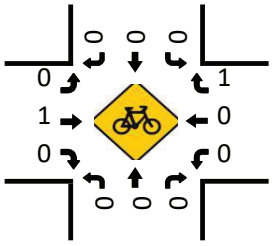
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Columbus Pkwy

Peak Hour Turning Movement Count

ID: 19-08420-001
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Admiral Callaghan Ln — SOUTHBOUND

AM	0	0	1	0	2	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Columbus Pkwy

AM	NOON	PM		
1074	0	0	⇦	
8	0	0	↶	0
1	0	0	↱	1
888	0	0	→	2
382	0	0	↳	1
AM	NOON	PM		

WESTBOUND — Columbus Pkwy

PM	NOON	AM		
0	0	1	↷	0
0	0	865	←	3
0	0	41	↰	1
0	0	0	↲	0
0	0	941	⇨	
PM	NOON	AM		

CONTROL

Signalized

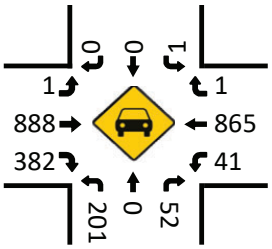
TEV	2441	0	0
	AM	NOON	PM
PHF	0.94		

NORTHBOUND — Admiral Callaghan Ln

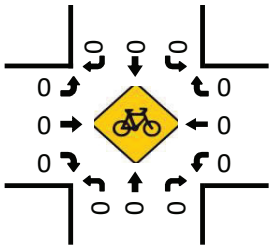
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	424	1	201	0	52	AM

0 1 0 0 — 0 1.5 0.5 1

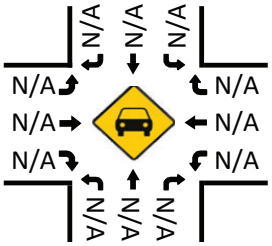
Total Vehicles (AM)



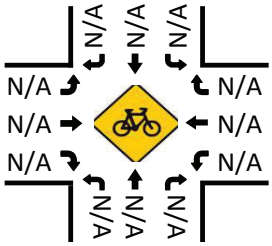
Bikes (AM)



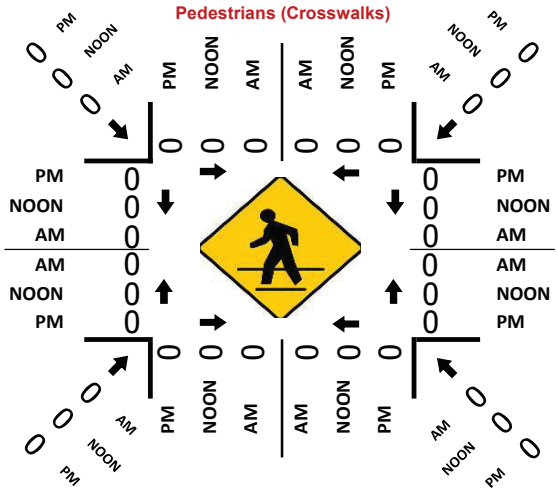
Total Vehicles (Noon)



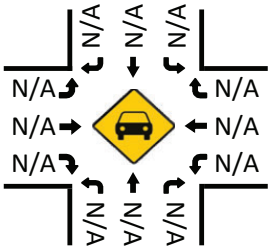
Bikes (NOON)



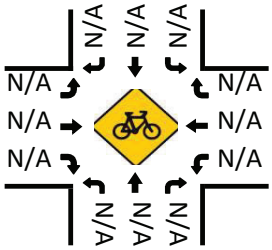
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Auto Club Way & Admiral Callaghan Ln

Peak Hour Turning Movement Count

ID: 19-08420-002
City: Vallejo

Day: Tuesday
Date: 08/27/2019

	PEAK HOURS	COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

Auto Club Way – SOUTHBOUND

	Right	Thru	Left	U-Turn	Exiting
AM	19	1	41	0	54
NOON	0	0	0	0	0
PM	0	0	0	0	0
Lanes	0.5	0.5	1	0	

Admiral Callaghan Ln – EASTBOUND

	AM	NOON	PM	Lanes
Exiting	444	0	0	
U-Turn	0	0	0	0
Left	39	0	0	1
Thru	264	0	0	2
Right	8	0	0	0

Admiral Callaghan Ln – WESTBOUND

	Lanes	PM	NOON	AM
Right	1	0	0	15
Thru	2	0	0	423
Left	1	0	0	48
U-Turn	0	0	0	1
Exiting		0	0	326

Auto Club Way – NORTHBOUND

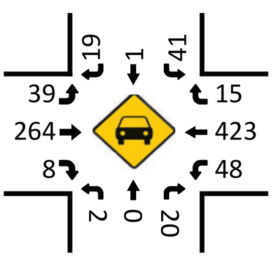
	Exiting	U-Turn	Left	Thru	Right
Lanes		0	1	0.5	0.5
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	57	0	2	0	20

CONTROL

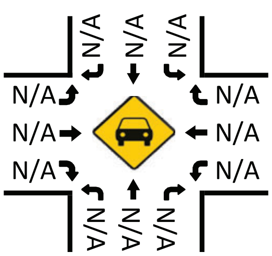
Signalized

	AM	NOON	PM
TEV	881	0	0
PHF	0.87		

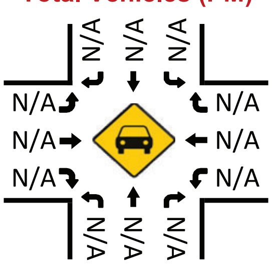
Total Vehicles (AM)



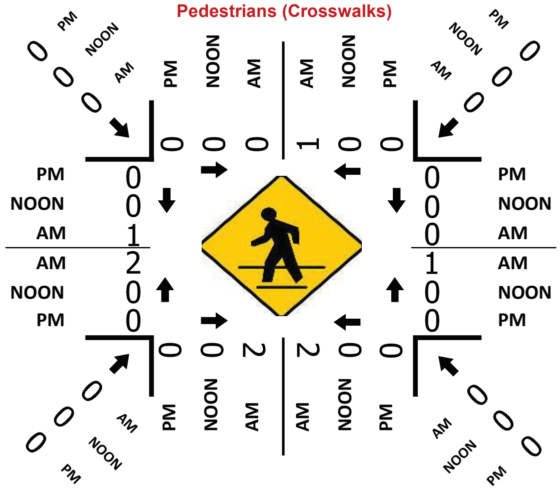
Total Vehicles (Noon)



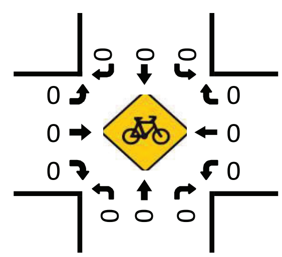
Total Vehicles (PM)



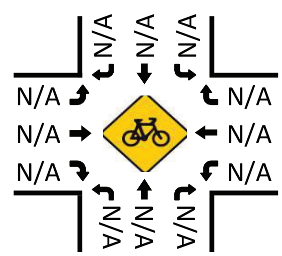
Pedestrians (Crosswalks)



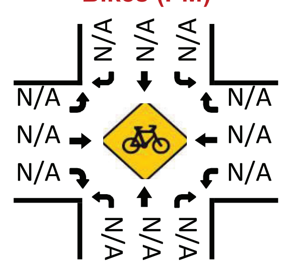
Bikes (AM)



Bikes (NOON)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & Admiral Callaghan Ln

Peak Hour Turning Movement Count

ID: 19-08420-003
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

SOUTHBOUND — Plaza Dr

	L	T	R	U	Total	
AM	26	16	77	0	171	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Admiral Callaghan Ln

AM	NOON	PM		
214	0	0		
0	0	0	0	
33	0	0	1	
126	0	0	2	
24	0	0	0	
AM	NOON	PM		

WESTBOUND — Admiral Callaghan Ln

PM	NOON	AM		
0	0	121	0	
0	0	176	2	
0	0	150	1	
0	0	0	0	
0	0	312		
PM	NOON	AM		

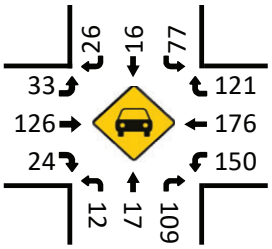
NORTHBOUND — Plaza Dr

	L	T	R	U	Total	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	190	0	12	17	109	AM

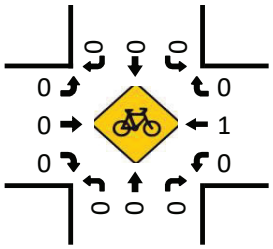
	L	T	R	U
SOUTHBOUND	1	1	1	0
EASTBOUND	0	1	2	0
WESTBOUND	0	2	1	0
NORTHBOUND	0	1	1	1

CONTROL			
Signalized			
TEV	887	0	0
	AM	NOON	PM
PHF	0.87		

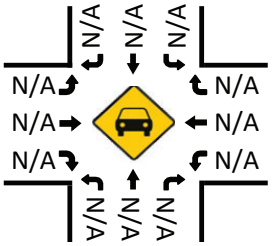
Total Vehicles (AM)



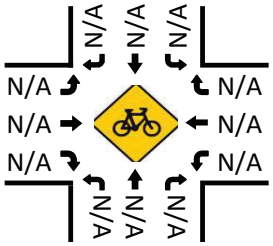
Bikes (AM)



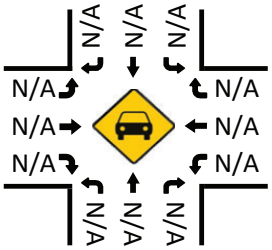
Total Vehicles (Noon)



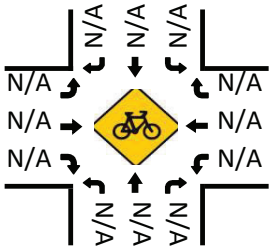
Bikes (NOON)



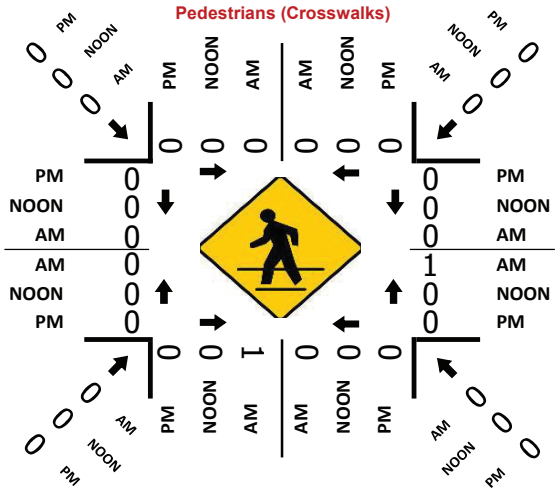
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & N Target Center Dwy

Peak Hour Turning Movement Count

ID: 19-08420-004
City: Vallejo

Day: Tuesday
Date: 08/27/2019

	PEAK HOURS	COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

Admiral Callaghan Ln — SOUTHBOUND

	U-turn	Left	Through	Right	Departing
AM	0	152	42	0	189
NOON	0	0	0	0	0
PM	0	0	0	0	0
Bikes/Peds	0	2	1	0	

N Target Center Dwy — EASTBOUND

	AM	NOON	PM	
Departing	0	0	0	
U-turn	0	0	0	0
Left	0	0	0	0
Through	0	0	0	0
Right	0	0	0	0

N Target Center Dwy — WESTBOUND

		PM	NOON	AM
Right	1	0	0	37
Through	0	0	0	0
Left	1	0	0	81
U-turn	0	0	0	0
Departing		0	0	133

Admiral Callaghan Ln — NORTHBOUND

	Departing	U-turn	Left	Through	Right
		0	0	2	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	233	0	0	152	91

CONTROL

Signalized

	AM	NOON	PM
TEV	555	0	0
PHF	0.87		

Total Vehicles (AM)

- Southbound: 0 (U-turn), 152, 42
- Westbound: 37, 0, 81
- Northbound: 0, 152, 91
- Eastbound: 0, 0, 0

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

All movements: N/A

Bikes (AM)

- Southbound: 0, 0, 0
- Westbound: 0, 0, 0
- Northbound: 0, 1, 0
- Eastbound: 0, 0, 0

Bikes (NOON)

All movements: N/A

Bikes (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (west half)	0	0	0
North leg (east half)	0	0	0
West leg (upper)	0	0	0
West leg (lower)	0	0	0
East leg (upper)	3	0	0
East leg (lower)	4	0	0
South leg (west half)	0	0	0
South leg (east half)	0	0	0
NW corner	0	0	0
NE corner	0	0	0
SW corner	0	0	0
SE corner	0	0	0

Prepared by National Data & Surveying Services

Admiral Callaghan Ln & S Target Center Dwy

Peak Hour Turning Movement Count

ID: 19-08420-005
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
AM	08:00 AM - 09:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Admiral Callaghan Ln — SOUTHBOUND

	L	T	R	U	
AM	0	232	0	0	243 AM
NOON	0	0	0	0	0 NOON
PM	0	0	0	0	0 PM

S Target Center Dwy — EASTBOUND

	L	T	R	U	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM
	0	0	0	0	

S Target Center Dwy — WESTBOUND

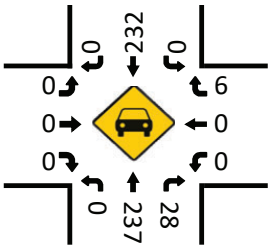
	L	T	R	U	
PM	0	0	6	0	PM
NOON	0	0	0	1	NOON
AM	0	0	0	0	AM
	0	0	28	0	

Admiral Callaghan Ln — NORTHBOUND

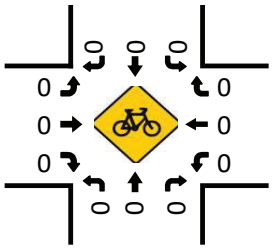
	L	T	R	U	
PM	0	0	0	0	0 PM
NOON	0	0	0	0	0 NOON
AM	232	0	0	237	28 AM

CONTROL			
No Control			
TEV	503	0	0
	AM	NOON	PM
PHF	0.89		

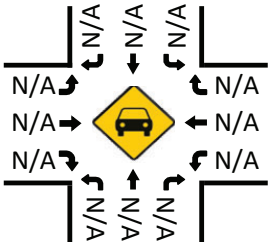
Total Vehicles (AM)



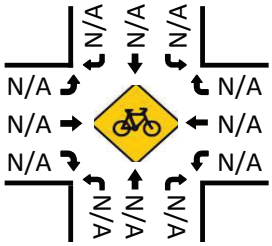
Bikes (AM)



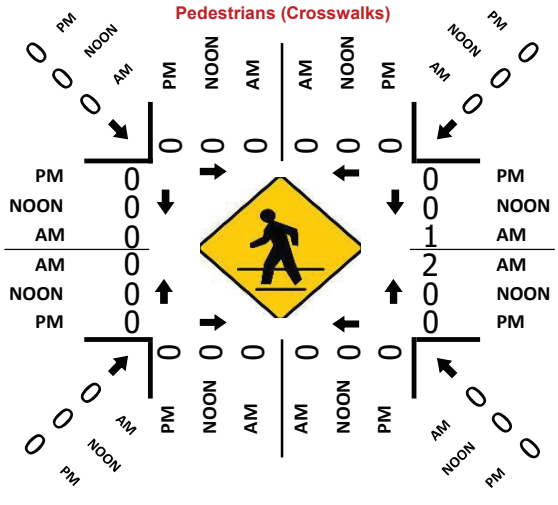
Total Vehicles (NOON)



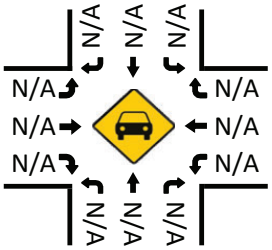
Bikes (NOON)



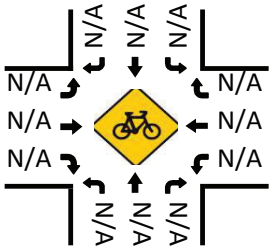
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Turner Pkwy

Peak Hour Turning Movement Count

ID: 19-08420-006
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Admiral Callaghan Ln — SOUTHBOUND

AM	0	197	32	1	271	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Turner Pkwy — EASTBOUND

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

Turner Pkwy — WESTBOUND

PM	NOON	AM	
0	0	19	1.5
0	0	0	0
0	0	126	1.5
0	0	6	0
0	0	152	
PM	NOON	AM	

CONTROL: Signalized

TEV	746	0	0
	AM	NOON	PM
PHF	0.94		

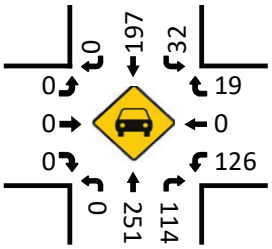
0 2 1 0

0 0 1.5 0.5

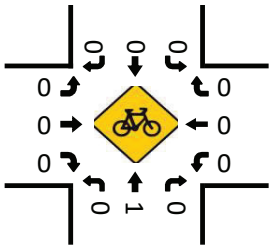
Admiral Callaghan Ln — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	323	0	0	251	114	AM

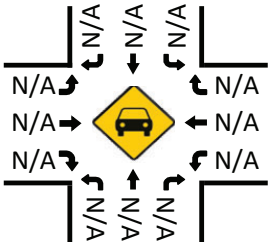
Total Vehicles (AM)



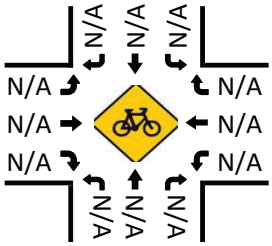
Bikes (AM)



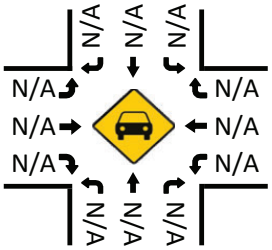
Total Vehicles (Noon)



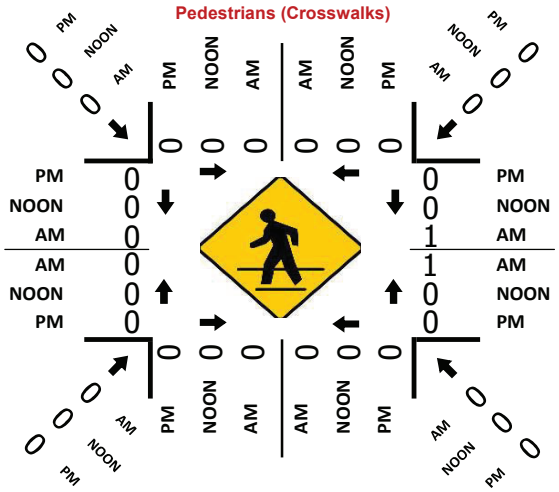
Bikes (NOON)



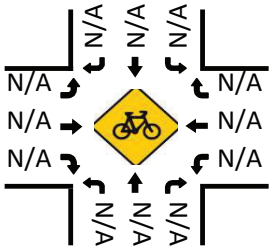
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Rotary Way

Peak Hour Turning Movement Count

ID: 19-08420-007
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Admiral Callaghan Ln — SOUTHBOUND

AM	0	270	45	0	377	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Rotary Way — EASTBOUND

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

Rotary Way — WESTBOUND

PM	NOON	AM
0	0	37
0	0	0
0	0	133
0	0	0
0	0	112

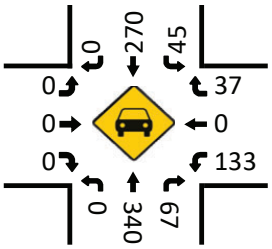
CONTROL: Signalized

TEV	892	0	0
	AM	NOON	PM
PHF	0.94		

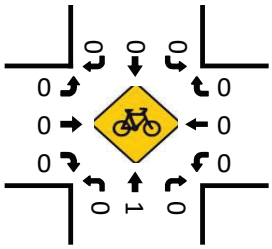
Admiral Callaghan Ln — NORTHBOUND

PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	403	0	0	340	67	AM

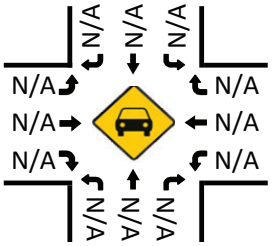
Total Vehicles (AM)



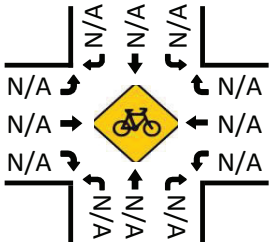
Bikes (AM)



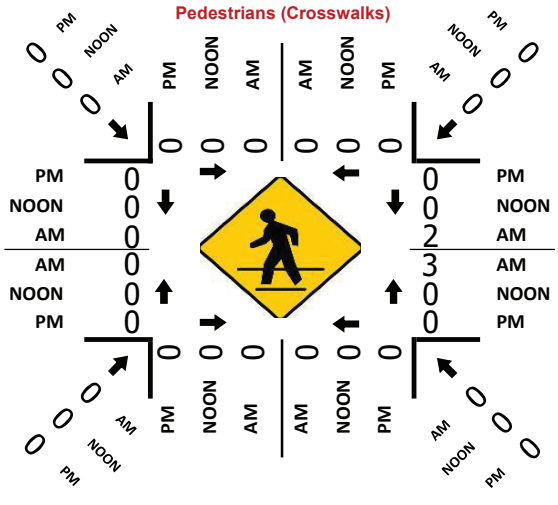
Total Vehicles (Noon)



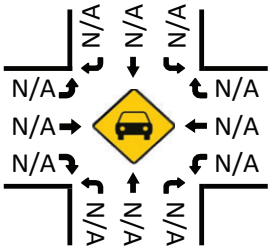
Bikes (NOON)



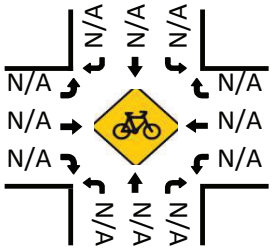
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Admiral Callaghan Ln & I-80 EB Ramps

Peak Hour Turning Movement Count

ID: 19-08420-008
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

Admiral Callaghan Ln – SOUTHBOUND

	Right	Through	Left	U-Turn	Exit
AM	86	362	0	0	456
NOON	0	0	0	0	0
PM	0	0	0	0	0
Bikes	0	2	0	0	

I-80 EB Ramps – EASTBOUND

	AM	NOON	PM	Bikes
Exit	260	0	0	
U-Turn	0	0	0	0
Left	0	0	0	0
Through	0	0	0	0
Right	614	0	0	1

I-80 EB Ramps – WESTBOUND

	AM	NOON	PM	Bikes
Right	14	0	0	0
Through	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Exit	92	0	0	

Admiral Callaghan Ln – NORTHBOUND

	Exit	U-Turn	Left	Through	Right
Bikes		0	1	2	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	976	0	174	442	92

CONTROL

1-Way Yield (EB)

	AM	NOON	PM
TEV	1784	0	0
PHF	0.94		

Total Vehicles (AM)

Approach	Left	Through	Right
Southbound	0	362	86
Eastbound	0	0	614
Westbound	0	0	14
Northbound	174	442	92

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

All movements: N/A

Bikes (AM)

Approach	Left	Through	Right
Southbound	0	0	0
Eastbound	0	0	0
Westbound	0	0	0
Northbound	0	1	0

Bikes (NOON)

All movements: N/A

Bikes (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk		PM	NOON	AM
North	West half	0	0	0
North	East half	0	0	1
West	North half	0	0	1
West	South half	0	0	0
East	North half	0	0	1
East	South half	0	0	2
South	West half	0	0	0
South	East half	0	0	0
Corners (all four)		0	0	0

Prepared by National Data & Surveying Services

Fairgrounds Dr & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08420-009
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	
AM	07:30 AM - 08:30 AM
NOON	NONE
PM	NONE

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Fairgrounds Dr — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	173	169	147	0	238
NOON	0	0	0	0	0
PM	0	0	0	0	0
Lanes	1	1	1	0	

Redwood Pkwy — EASTBOUND

	AM	NOON	PM	Lanes
Departing	1180	0	0	
U-Turn	0	0	0	0
Left	94	0	0	1
Thru	458	0	0	2
Right	350	0	0	1

Redwood Pkwy — WESTBOUND

	Lanes	PM	NOON	AM
Right	0	0	0	144
Thru	2	0	0	1007
Left	2	0	0	279
U-Turn	0	0	0	0
Departing		0	0	605

Fairgrounds Dr — NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Lanes		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	798	0	0	0	0

CONTROL

Signalized

	AM	NOON	PM
TEV	2821	0	0
PHF	0.94		

Total Vehicles (AM)

Approach	Left	Thru	Right
Southbound	147	169	173
Eastbound	94	458	350
Westbound	279	1007	144
Northbound	0	0	0

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

All movements: N/A

Bikes (AM)

Approach	Left	Thru	Right
Southbound	0	0	0
Eastbound	0	1	0
Westbound	0	1	0
Northbound	0	0	0

Bikes (NOON)

All movements: N/A

Bikes (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North leg	Eastbound	5	0	0
North leg	Westbound	1	0	0
West leg	Southbound	0	0	0
West leg	Northbound	0	0	0
East leg	Southbound	0	0	0
East leg	Northbound	0	0	0
South leg	Eastbound	0	0	0
South leg	Westbound	0	0	0
NW diagonal		0	0	0
NE diagonal		0	0	0
SW diagonal		0	0	0
SE diagonal		0	0	0

Prepared by National Data & Surveying Services

Admiral Callaghan Ln/I-80 EB off-Ramp & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08420-010
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

Admiral Callaghan Ln/I-80 EB off-Ramp – SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	881	0	76	0	663
NOON	0	0	0	0	0
PM	0	0	0	0	0
Bikes	2	0	2	0	

Redwood Pkwy – WESTBOUND

	Bikes	PM	NOON	AM
Right	0	0	0	163
Thru	2	0	0	553
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	0	610

Redwood Pkwy – EASTBOUND

	AM	NOON	PM	Bikes
Departing	1436	0	0	
U-Turn	0	0	0	0
Left	300	0	0	2
Thru	399	0	0	2
Right	0	0	0	0

Admiral Callaghan Ln/I-80 EB off-Ramp – NORTHBOUND

	Departing	U-Turn	Left	Thru	Right
Bikes		0	0	2	1
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	2	200	135

CONTROL

Signalized

	AM	NOON	PM
TEV	2709	0	0
PHF	0.97		

Total Vehicles (AM)

Approach	Left	Thru	Right
Southbound	76	0	881
Westbound	0	553	163
Northbound	2	200	135
Eastbound	300	399	0

Bikes (AM)

Approach	Left	Thru	Right
Southbound	0	0	0
Westbound	0	1	0
Northbound	0	0	0
Eastbound	0	1	0

Total Vehicles (Noon)

All movements: N/A

Bikes (NOON)

All movements: N/A

Total Vehicles (PM)

All movements: N/A

Bikes (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	AM	NOON	PM
North leg (west half)	2	0	0
North leg (east half)	1	0	0
East leg (north half)	0	0	0
East leg (south half)	0	0	0
South leg (west half)	0	0	0
South leg (east half)	0	0	0
West leg (north half)	0	0	0
West leg (south half)	0	0	0
NW diagonal	0	0	0
NE diagonal	0	0	0
SW diagonal	0	0	0
SE diagonal	0	0	0

Prepared by National Data & Surveying Services

Admiral Callaghan Ln & Redwood Pkwy

Peak Hour Turning Movement Count

ID: 19-08420-011
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

Admiral Callaghan Ln — SOUTHBOUND

AM	2	0	0	0	17	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Redwood Pkwy

AM	NOON	PM		
757	0	0		
6	0	0	0	
15	0	0	1	
469	0	0	2	
128	0	0	0	
AM	NOON	PM		

WESTBOUND — Redwood Pkwy

	PM	NOON	AM
0	0	0	2
2	0	0	625
1	0	0	120
0	0	0	0
	0	0	550
	PM	NOON	AM

CONTROL

Signalized

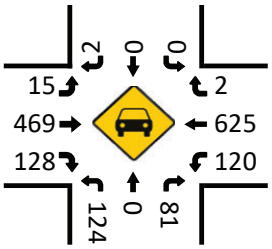
TEV	1572	0	0
	AM	NOON	PM
PHF	0.86		

NORTHBOUND — Admiral Callaghan Ln

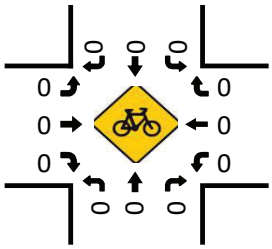
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	248	0	124	0	81	AM

0 1 0 0 — 0 1 0.5 0.5

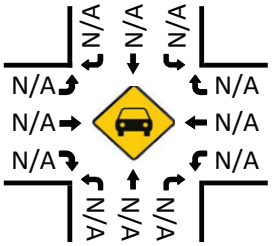
Total Vehicles (AM)



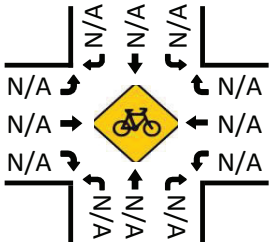
Bikes (AM)



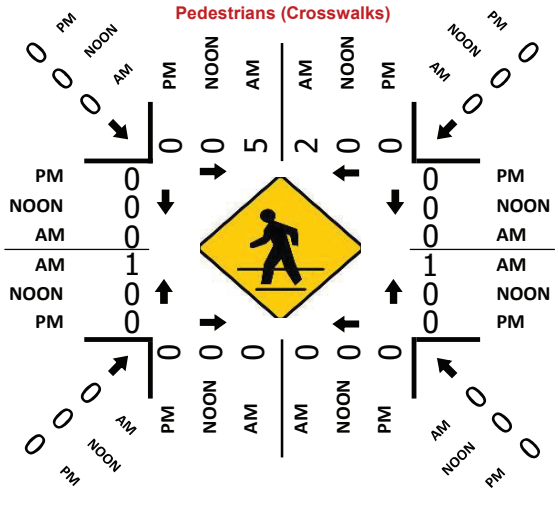
Total Vehicles (Noon)



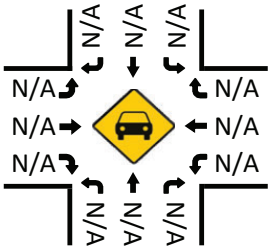
Bikes (NOON)



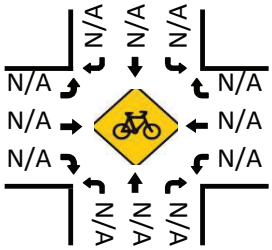
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & N Gateway Plaza Dwy

Peak Hour Turning Movement Count

ID: 19-08420-012
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS		COUNT PERIODS
AM	08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	NONE	NONE

SOUTHBOUND — Plaza Dr

AM	54	112	12	0	139	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

0 2 1 0

EASTBOUND — N Gateway Plaza Dwy

AM	NOON	PM	
80	0	0	
0	0	0	0
17	0	0	0
3	0	0	1
14	0	0	0

WESTBOUND — N Gateway Plaza Dwy

	PM	NOON	AM
0	0	0	19
1	0	0	4
0	0	0	14
0	0	0	0
	0	0	22

CONTROL

Signalized

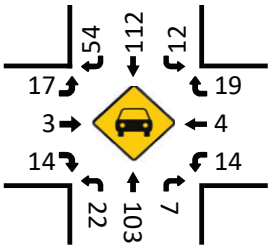
TEV	381	0	0
	AM	NOON	PM
PHF	0.79		

0 1 2 0

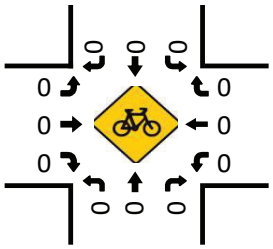
NORTHBOUND — Plaza Dr

PM	0	0	0	0	PM
NOON	0	0	0	0	NOON
AM	140	0	22	103	7	AM

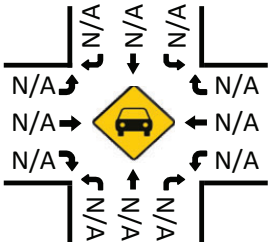
Total Vehicles (AM)



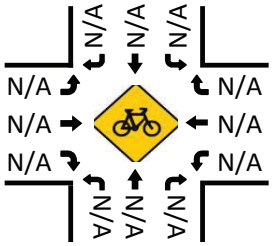
Bikes (AM)



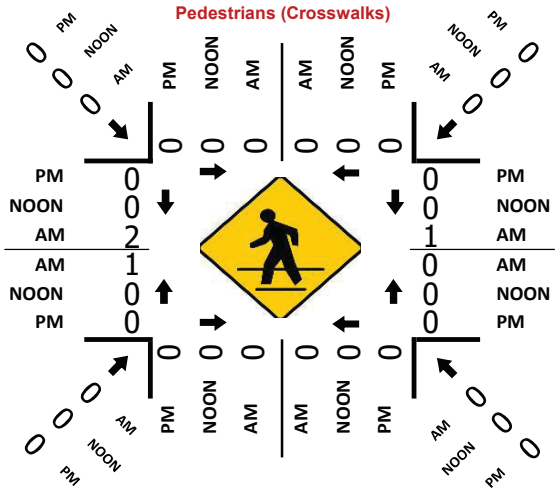
Total Vehicles (Noon)



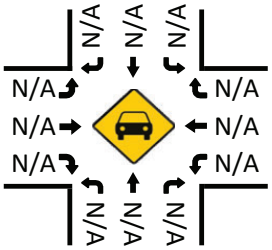
Bikes (NOON)



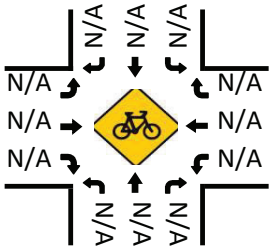
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Plaza Dr & S Gateway Plaza Dwy

Peak Hour Turning Movement Count

ID: 19-08420-013
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	NONE

CONTROL: 2-Way Stop (EB/WB)

	AM	NOON	PM
TEV	519	0	0
PHF	0.84		

Plaza Dr — SOUTHBOUND

	Left	Thru	Right	U-Turn	
AM	6	48	77	0	132
NOON	0	0	0	0	0
PM	0	0	0	0	0

S Gateway Plaza Dwy — EASTBOUND

	Left	Thru	Right	U-Turn	
AM	14	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0

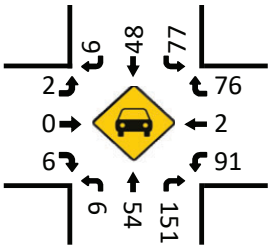
S Gateway Plaza Dwy — WESTBOUND

	Left	Thru	Right	U-Turn	
AM	0	0	76	0	0
NOON	0	0	2	1	0
PM	0	0	91	0	0

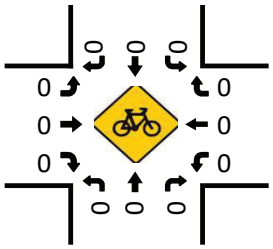
Plaza Dr — NORTHBOUND

	Left	Thru	Right	U-Turn	
AM	145	0	6	54	151
NOON	0	0	0	0	0
PM	0	0	0	0	0

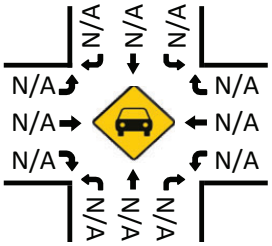
Total Vehicles (AM)



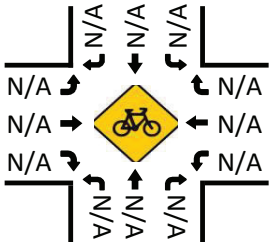
Bikes (AM)



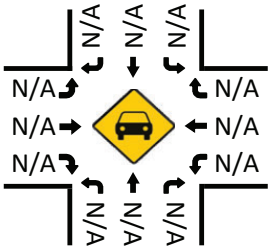
Total Vehicles (Noon)



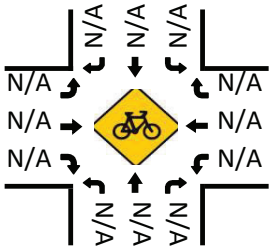
Bikes (NOON)



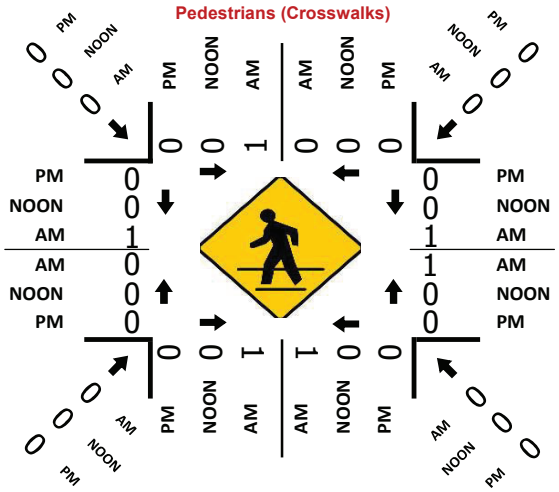
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Plaza Dr & Turner Pkwy

Peak Hour Turning Movement Count

ID: 19-08420-014
City: Vallejo

Day: Tuesday
Date: 08/27/2019

PEAK HOURS	COUNT PERIODS
08:00 AM - 09:00 AM	07:00 AM - 09:00 AM
NONE	NONE
NONE	NONE

Plaza Dr — SOUTHBOUND

	Right	Through	Left	U-Turn	Departing
AM	71	0	74	0	211
NOON	0	0	0	0	0
PM	0	0	0	0	0
	1.5	0	1.5	0	

Turner Pkwy — EASTBOUND

	AM	NOON	PM	
Departing	134	0	0	
U-Turn	0	0	0	0
Left	99	0	0	1
Through	49	0	0	2
Right	0	0	0	0

Turner Pkwy — WESTBOUND

		PM	NOON	AM
Right	0	0	0	112
Through	2	0	0	63
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	0	123

Plaza Dr — NORTHBOUND

	Departing	U-Turn	Left	Through	Right
		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

CONTROL

Signalized

	AM	NOON	PM
TEV	468	0	0
PHF	0.95		

Total Vehicles (AM)

	Right	Through	Left / U-Turn
Southbound	71	0	74 / 0 (U)
Eastbound	0	49	99
Westbound	112	63	0
Northbound	0	0	0

Total Vehicles (Noon)

All movements: N/A

Total Vehicles (PM)

All movements: N/A

Bikes (AM)

All movements: 0

Bikes (NOON)

All movements: N/A

Bikes (PM)

All movements: N/A

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North	West to East	1	0	0
North	East to West	2	0	0
West	Southbound	0	0	0
West	Northbound	0	0	0
East	Southbound	0	0	0
East	Northbound	0	0	0
South	West to East	0	0	0
South	East to West	0	0	0
Diagonal NW		0	0	0
Diagonal NE		0	0	0
Diagonal SW		0	0	0
Diagonal SE		0	0	0

Appendix B:
Synchro Worksheets



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	888	382	41	865	1	202	0	52	1	0	0
Future Volume (veh/h)	9	888	382	41	865	1	202	0	52	1	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	9	906	0	42	883	1	206	0	0	1	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	4	1611	721	80	2622	3	509	0	227	4	0	0
Arrive On Green	0.00	0.46	0.00	0.05	0.50	0.48	0.14	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5195	6	3514	0	1568	1757	0	0
Grp Volume(v), veh/h	9	906	0	42	571	313	206	0	0	1	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1844	1757	0	1568	1757	0	0
Q Serve(g_s), s	0.1	8.4	0.0	1.0	4.5	4.5	2.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	8.4	0.0	1.0	4.5	4.5	2.4	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	4	1611	721	80	1694	930	509	0	227	4	0	0
V/C Ratio(X)	2.28	0.56	0.00	0.53	0.34	0.34	0.40	0.00	0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h	375	2836	1269	592	2716	1492	2369	0	1057	375	0	0
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	22.2	8.8	0.0	20.8	6.6	6.6	17.3	0.0	0.0	22.2	0.0	0.0
Incr Delay (d2), s/veh	716.6	0.7	0.0	5.3	0.2	0.5	1.1	0.0	0.0	30.6	0.0	0.0
Initial Q Delay(d3),s/veh	222.7	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	0.8	4.2	0.0	0.6	2.1	2.4	1.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	961.5	9.4	0.0	26.0	6.8	7.0	18.4	0.0	0.0	52.8	0.0	0.0
LnGrp LOS	F	A		C	A	A	B			D		
Approach Vol, veh/h		915			926			206			1	
Approach Delay, s/veh		18.8			7.8			18.4			52.8	
Approach LOS		B			A			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.0	24.5		10.5	4.0	26.5		3.6
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	3.0	10.4		4.4	2.1	6.5		2.0
Green Ext Time (p_c), s	0.1	9.1		1.8	0.0	8.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	264	9	49	423	15	2	0	20	41	1	19
Future Volume (veh/h)	39	264	9	49	423	15	2	0	20	41	1	19
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	40	269	6	50	432	-9	2	0	-115	42	1	-28
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	47	1394	31	66	1431	640	8	0	363	51	0	319
Arrive On Green	0.03	0.40	0.40	0.04	0.41	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Sat Flow, veh/h	1757	3505	78	1757	3505	1568	1757	1845	0	1757	1845	0
Grp Volume(v), veh/h	40	134	141	50	432	-9	2	-115	-115	42	-27	-27
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	0.5	1.1	1.1	0.6	1.9	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	0.5	1.1	1.1	0.6	1.9	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	47	697	728	66	1431	640	8	0	0	51	0	0
V/C Ratio(X)	0.85	0.19	0.19	0.76	0.30	-0.01	0.25	0.00	0.00	0.82	0.00	0.00
Avail Cap(c_a), veh/h	1530	2348	2453	1530	4695	2101	1530	0	0	1373	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.9	4.4	4.4	10.7	4.5	0.0	11.2	0.0	0.0	10.8	0.0	0.0
Incr Delay (d2), s/veh	31.5	0.3	0.3	16.4	0.3	0.0	16.2	0.0	0.0	26.7	0.0	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	0.6	0.6	0.6	0.6	0.9	0.0	0.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	42.3	4.7	4.7	27.1	4.7	0.0	27.3	0.0	0.0	37.5	0.0	0.0
LnGrp LOS	D	A	A	C	A		C			D		
Approach Vol, veh/h		315			473			-228			-12	
Approach Delay, s/veh		9.5			7.2			-0.2			-131.4	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	12.9	4.6	0.0	4.6	13.1	3.6	1.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	2.6	3.1	2.5	0.0	2.5	3.9	2.0	0.0
Green Ext Time (p_c), s	0.1	2.9	0.1	0.0	0.1	5.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	126	24	150	176	121	12	17	109	77	16	26
Future Volume (veh/h)	33	126	24	150	176	121	12	17	109	77	16	26
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	34	129	14	153	180	52	12	17	12	79	16	6
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	42	742	79	184	846	238	6	91	77	112	212	180
Arrive On Green	0.02	0.23	0.22	0.10	0.31	0.30	0.00	0.05	0.05	0.06	0.11	0.11
Sat Flow, veh/h	1757	3193	342	1757	2702	759	1757	1845	1563	1757	1845	1566
Grp Volume(v), veh/h	34	70	73	153	115	117	12	17	12	79	16	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1783	1757	1752	1709	1757	1845	1563	1757	1845	1566
Q Serve(g_s), s	0.6	0.9	1.0	2.5	1.4	1.5	0.1	0.3	0.2	1.3	0.2	0.1
Cycle Q Clear(g_c), s	0.6	0.9	1.0	2.5	1.4	1.5	0.1	0.3	0.2	1.3	0.2	0.1
Prop In Lane	1.00		0.19	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	42	407	414	184	549	535	6	91	77	112	212	180
V/C Ratio(X)	0.80	0.17	0.18	0.83	0.21	0.22	1.99	0.19	0.16	0.70	0.08	0.03
Avail Cap(c_a), veh/h	1086	2768	2816	2775	4573	4460	845	1647	1396	1146	2154	1828
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	14.1	8.9	9.0	12.8	7.4	7.5	14.6	13.3	13.3	13.4	11.5	11.5
Incr Delay (d2), s/veh	28.3	0.3	0.3	9.3	0.3	0.3	550.1	1.0	0.9	7.8	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	90.9	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.5	0.5	1.7	0.7	0.7	1.6	0.2	0.1	0.9	0.1	0.0
LnGrp Delay(d),s/veh	42.4	9.2	9.3	22.1	7.6	7.8	655.5	14.2	14.2	21.1	11.7	11.5
LnGrp LOS	D	A	A	C	A	A	F	B	B	C	B	B
Approach Vol, veh/h		177			385			41			101	
Approach Delay, s/veh		15.6			13.4			201.9			19.1	
Approach LOS		B			B			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	10.8	5.9	5.4	4.7	13.1	4.0	7.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	4.5	3.0	3.3	2.3	2.6	3.5	2.1	2.2
Green Ext Time (p_c), s	0.4	1.2	0.1	0.1	0.0	2.1	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	3	5	14	4	19	22	103	7	12	112	54
Future Volume (veh/h)	17	3	5	14	4	19	22	103	7	12	112	54
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	17	3	-14	14	4	-45	22	105	7	12	114	-41
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	489	1071	0	0	216	428	13	1487	98	13	1516	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.45	0.00	0.43	0.00
Sat Flow, veh/h	4578	808	-3770	NAN	NAN	NAN	1757	3338	221	1757	3597	0
Grp Volume(v), veh/h	0	0	0	0	0	0	22	55	57	12	73	0
Grp Sat Flow(s),veh/h/ln	0	0	0	0	0	0	1757	1752	1806	1757	1752	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.1	0.2	0.0
Prop In Lane	2.83		-2.33	-0.52		1.67	1.00		0.12	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	0	0	0	0	13	781	805	13	1516	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.07	0.07	0.95	0.05	0.00
Avail Cap(c_a), veh/h	0	0	0	0	0	0	2206	3773	3887	2206	7545	0
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)	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	7.0	2.2	2.2	7.0	2.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	396.4	0.1	0.1	104.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.1	0.1	0.4	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	404.7	2.3	2.3	111.6	2.3	0.0
LnGrp LOS							F	A	A	F	A	
Approach Vol, veh/h		0			0			134			85	
Approach Delay, s/veh		0.0			0.0			68.3			17.7	
Approach LOS								E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.7	10.2		0.0	3.9	10.0		0.0
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.1	2.3		0.0	2.1	2.2		0.0
Green Ext Time (p_c), s	0.0	0.8		0.0	0.0	0.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	48.7
HCM 2010 LOS	D

Notes

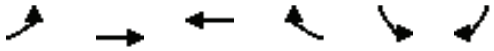
Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	6	91	2	76	6	54	151	77	48	6
Future Vol, veh/h	2	0	6	91	2	76	6	54	151	77	48	6
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	2	0	6	93	2	78	6	55	154	79	49	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	253	431	28	327	357	107	55	0	0	209	0	0
Stage 1	210	210	-	144	144	-	-	-	-	-	-	-
Stage 2	43	221	-	183	213	-	-	-	-	-	-	-
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	677	513	1037	600	565	923	1541	-	-	1352	-	-
Stage 1	770	725	-	841	774	-	-	-	-	-	-	-
Stage 2	963	717	-	798	723	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	588	481	1037	568	530	921	1541	-	-	1352	-	-
Mov Cap-2 Maneuver	588	481	-	568	530	-	-	-	-	-	-	-
Stage 1	767	683	-	838	771	-	-	-	-	-	-	-
Stage 2	874	714	-	747	681	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	12	0.2	4.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1541	-	-	871	686	1352	-	-
HCM Lane V/C Ratio	0.004	-	-	0.009	0.251	0.058	-	-
HCM Control Delay (s)	7.3	-	-	9.2	12	7.8	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	1	0.2	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	99	49	63	112	74	71
Future Volume (vph)	99	49	63	112	74	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.90		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3168		3321	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3168		3321	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	101	50	64	114	76	72
RTOR Reduction (vph)	0	0	70	0	21	40
Lane Group Flow (vph)	101	50	108	0	80	7
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	4.5	21.4	13.4		5.1	5.1
Effective Green, g (s)	4.0	21.4	13.4		5.1	5.1
Actuated g/C Ratio	0.12	0.62	0.39		0.15	0.15
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	203	2174	1230		490	210
v/s Ratio Prot	c0.06	0.01	c0.03			
v/s Ratio Perm					c0.02	0.00
v/c Ratio	0.50	0.02	0.09		0.16	0.03
Uniform Delay, d1	14.3	2.5	6.7		12.8	12.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.9	0.0	0.1		0.2	0.1
Delay (s)	16.2	2.5	6.7		13.0	12.7
Level of Service	B	A	A		B	B
Approach Delay (s)		11.7	6.7		12.9	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	34.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	133	23	0	166	22	71
Future Vol, veh/h	133	23	0	166	22	71
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	146	25	0	182	24	78

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	255	88
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	712	953
Stage 1	-	-	0	-	852	-
Stage 2	-	-	0	-	918	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	709	951
Mov Cap-2 Maneuver	-	-	-	-	709	-
Stage 1	-	-	-	-	851	-
Stage 2	-	-	-	-	915	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	880	-	-	-
HCM Lane V/C Ratio	0.116	-	-	-
HCM Control Delay (s)	9.6	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

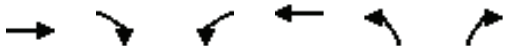
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	141	0	2	331	23	8	0	0	18	0	34
Future Vol, veh/h	23	141	0	2	331	23	8	0	0	18	0	34
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	164	0	2	385	27	9	0	0	21	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	412	0	-	164	0	0	415	634	82	539	-	206
Stage 1	-	-	-	-	-	-	218	218	-	403	-	-
Stage 2	-	-	-	-	-	-	197	416	-	136	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1143	-	0	1412	-	-	522	395	961	426	0	800
Stage 1	-	-	0	-	-	-	764	721	-	595	0	-
Stage 2	-	-	0	-	-	-	786	590	-	853	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1143	-	-	1412	-	-	487	385	961	417	-	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	487	385	-	417	-	-
Stage 1	-	-	-	-	-	-	746	704	-	581	-	-
Stage 2	-	-	-	-	-	-	746	589	-	833	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0	12.5	11.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	487	1143	-	1412	-	-	417	800
HCM Lane V/C Ratio	0.018	0.023	-	0.002	-	-	0.05	0.049
HCM Control Delay (s)	12.5	8.2	-	7.6	-	-	14.1	9.7
HCM Lane LOS	B	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.1	-	0	-	-	0.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	117	38	72	220	51	54
Future Volume (veh/h)	117	38	72	220	51	54
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	129	42	79	242	56	59
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	732	230	115	1803	279	248
Arrive On Green	0.27	0.27	0.06	0.51	0.16	0.16
Sat Flow, veh/h	2755	835	1781	3647	1781	1585
Grp Volume(v), veh/h	84	87	79	242	56	59
Grp Sat Flow(s),veh/h/ln	1777	1720	1781	1777	1781	1585
Q Serve(g_s), s	0.9	0.9	1.0	0.9	0.7	0.8
Cycle Q Clear(g_c), s	0.9	0.9	1.0	0.9	0.7	0.8
Prop In Lane		0.49	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	488	473	115	1803	279	248
V/C Ratio(X)	0.17	0.18	0.69	0.13	0.20	0.24
Avail Cap(c_a), veh/h	2164	2095	1459	4329	3367	2996
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.6	6.6	10.9	3.1	8.7	8.8
Incr Delay (d2), s/veh	0.6	0.6	7.1	0.1	0.9	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.5	0.1	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.1	7.2	18.0	3.2	9.7	10.1
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	171			321	115	
Approach Delay, s/veh	7.2			6.9	9.9	
Approach LOS	A			A	A	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.5	10.5				16.1	7.7
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	3.0	2.9				2.9	2.8
Green Ext Time (p_c), s	0.1	2.1				3.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	7.5
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	62	68	43	135	21	102	83	23	11	81	55
Future Volume (veh/h)	41	62	68	43	135	21	102	83	23	11	81	55
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	68	0	47	148	0	112	91	0	12	89	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	752		105	760		203	1076		16	702	
Arrive On Green	0.06	0.21	0.00	0.06	0.21	0.00	0.11	0.30	0.00	0.01	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	45	68	0	47	148	0	112	91	0	12	89	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	0.9	0.6	0.0	1.0	1.3	0.0	2.3	0.7	0.0	0.3	0.8	0.0
Cycle Q Clear(g_c), s	0.9	0.6	0.0	1.0	1.3	0.0	2.3	0.7	0.0	0.3	0.8	0.0
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	101	752		105	760		203	1076		16	702	
V/C Ratio(X)	0.45	0.09		0.45	0.19		0.55	0.08		0.76	0.13	
Avail Cap(c_a), veh/h	1233	3573		1698	3573		1698	3573		1233	3573	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.5	12.1	0.0	17.4	12.3	0.0	16.0	9.5	0.0	18.9	12.6	0.0
Incr Delay (d2), s/veh	3.1	0.1	0.0	3.0	0.3	0.0	2.3	0.1	0.0	52.8	0.2	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	0.2	0.0	0.4	0.4	0.0	0.9	0.2	0.0	0.3	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.6	12.3	0.0	20.4	12.7	0.0	18.3	9.6	0.0	71.7	12.9	0.0
LnGrp LOS	C	B		C	B		B	A		E	B	
Approach Vol, veh/h		113	A		195	A		203	A		101	A
Approach Delay, s/veh		15.6			14.5			14.4			19.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	15.6	6.3	12.1	8.4	11.6	6.2	12.2
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.3	2.7	3.0	2.6	4.3	2.8	2.9	3.3
Green Ext Time (p_c), s	0.0	1.1	0.1	0.8	0.3	1.0	0.1	1.9

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	450	863	163	494	1	810	6	228	0	0	0
Future Volume (veh/h)	12	450	863	163	494	1	810	6	228	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	12	455	0	165	499	1	822	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	11	1103	493	214	2230	4	1249	0	557	0	3	0
Arrive On Green	0.01	0.31	0.00	0.12	0.43	0.41	0.36	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5190	10	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	12	455	0	165	323	177	822	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1843	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.4	5.9	0.0	5.2	3.5	3.5	11.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	5.9	0.0	5.2	3.5	3.5	11.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	11	1103	493	214	1442	792	1249	0	557	0	3	0
V/C Ratio(X)	1.05	0.41	0.00	0.77	0.22	0.22	0.66	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	290	2192	980	458	2099	1152	1831	0	817	0	304	0
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	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	28.6	15.5	0.0	24.5	10.4	10.4	15.6	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	140.0	0.5	0.0	5.9	0.2	0.3	1.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	1.3	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	2.9	0.0	2.9	1.6	1.8	5.7	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	169.9	16.1	0.0	30.4	10.5	10.7	16.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	B		C	B	B	B					
Approach Vol, veh/h		467			665			822			0	
Approach Delay, s/veh		20.0			15.5			16.9			0.0	
Approach LOS		C			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.0	22.1		24.5	4.4	28.7		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	7.2	7.9		13.3	2.4	5.5		0.0
Green Ext Time (p_c), s	0.3	9.2		7.1	0.0	9.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	753	37	155	722	29	28	8	127	127	8	102
Future Volume (veh/h)	82	753	37	155	722	29	28	8	127	127	8	102
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	83	761	34	157	729	11	28	8	14	128	8	23
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	1608	72	191	1832	819	39	21	36	153	42	120
Arrive On Green	0.06	0.47	0.47	0.11	0.52	0.52	0.02	0.03	0.03	0.09	0.10	0.10
Sat Flow, veh/h	1757	3417	153	1757	3505	1566	1757	602	1053	1757	420	1208
Grp Volume(v), veh/h	83	390	405	157	729	11	28	0	22	128	0	31
Grp Sat Flow(s),veh/h/ln	1757	1752	1817	1757	1752	1566	1757	0	1655	1757	0	1628
Q Serve(g_s), s	2.5	8.1	8.1	4.7	6.7	0.2	0.8	0.0	0.7	3.8	0.0	0.9
Cycle Q Clear(g_c), s	2.5	8.1	8.1	4.7	6.7	0.2	0.8	0.0	0.7	3.8	0.0	0.9
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.64	1.00		0.74
Lane Grp Cap(c), veh/h	100	825	855	191	1832	819	39	0	57	153	0	162
V/C Ratio(X)	0.83	0.47	0.47	0.82	0.40	0.01	0.71	0.00	0.38	0.84	0.00	0.19
Avail Cap(c_a), veh/h	640	982	1018	640	1963	878	640	0	773	574	0	669
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.0	9.6	9.7	23.4	7.7	6.1	26.0	0.0	25.3	24.1	0.0	22.1
Incr Delay (d2), s/veh	15.8	0.9	0.9	8.5	0.3	0.0	20.7	0.0	5.9	11.2	0.0	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	1.6	4.1	4.3	2.7	3.3	0.1	0.6	0.0	0.4	2.3	0.0	0.4
LnGrp Delay(d),s/veh	40.8	10.6	10.5	31.8	8.0	6.2	46.7	0.0	31.2	35.3	0.0	22.7
LnGrp LOS	D	B	B	C	A	A	D		C	D		C
Approach Vol, veh/h		878			897			50			159	
Approach Delay, s/veh		13.4			12.2			39.9			32.8	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	29.2	8.7	5.9	7.0	32.0	5.2	9.3
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	6.7	10.1	5.8	2.7	4.5	8.7	2.8	2.9
Green Ext Time (p_c), s	0.3	15.1	0.2	0.2	0.1	15.9	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	360	88	407	287	144	82	55	405	107	54	59
Future Volume (veh/h)	68	360	88	407	287	144	82	55	405	107	54	59
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	69	364	68	411	290	98	83	56	60	108	55	8
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	87	848	157	476	1316	436	97	167	142	128	200	169
Arrive On Green	0.05	0.29	0.28	0.27	0.51	0.50	0.06	0.09	0.09	0.07	0.11	0.11
Sat Flow, veh/h	1757	2954	547	1757	2589	857	1757	1845	1563	1757	1845	1559
Grp Volume(v), veh/h	69	215	217	411	194	194	83	56	60	108	55	8
Grp Sat Flow(s),veh/h/ln	1757	1752	1748	1757	1752	1693	1757	1845	1563	1757	1845	1559
Q Serve(g_s), s	2.2	5.7	5.8	12.8	3.5	3.7	2.7	1.6	2.1	3.5	1.6	0.3
Cycle Q Clear(g_c), s	2.2	5.7	5.8	12.8	3.5	3.7	2.7	1.6	2.1	3.5	1.6	0.3
Prop In Lane	1.00		0.31	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	87	503	502	476	891	861	97	167	142	128	200	169
V/C Ratio(X)	0.79	0.43	0.43	0.86	0.22	0.22	0.86	0.33	0.42	0.85	0.28	0.05
Avail Cap(c_a), veh/h	551	1404	1401	1408	2320	2242	428	835	708	581	1093	924
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	27.0	16.6	16.7	19.9	7.8	7.9	26.9	24.5	24.7	26.3	23.5	22.9
Incr Delay (d2), s/veh	15.0	0.8	0.8	4.8	0.2	0.2	18.5	1.2	2.0	13.9	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	1.4	2.9	2.9	6.8	1.7	1.7	1.8	0.9	1.0	2.2	0.8	0.1
LnGrp Delay(d),s/veh	41.9	17.4	17.6	24.7	8.0	8.1	45.4	25.6	26.7	40.2	24.3	23.1
LnGrp LOS	D	B	B	C	A	A	D	C	C	D	C	C
Approach Vol, veh/h		501			799			199			171	
Approach Delay, s/veh		20.9			16.6			34.2			34.3	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	20.5	8.2	9.2	6.8	33.2	7.2	10.2
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	6.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	4.8	7.8	5.5	4.1	4.2	5.7	4.7	3.6
Green Ext Time (p_c), s	1.3	8.1	0.2	0.7	0.1	8.7	0.1	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	42	83	134	34	231	23	201	39	136	212	104
Future Volume (veh/h)	117	42	83	134	34	231	23	201	39	136	212	104
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	118	42	66	135	34	188	23	203	20	137	214	41
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	366	139	141	292	85	255	24	768	75	163	933	176
Arrive On Green	0.31	0.31	0.33	0.31	0.31	0.33	0.01	0.24	0.24	0.09	0.32	0.32
Sat Flow, veh/h	652	445	452	461	273	817	1757	3225	315	1757	2943	554
Grp Volume(v), veh/h	226	0	0	357	0	0	23	109	114	137	126	129
Grp Sat Flow(s),veh/h/ln	1549	0	0	1551	0	0	1757	1752	1788	1757	1752	1745
Q Serve(g_s), s	0.0	0.0	0.0	3.0	0.0	0.0	0.4	1.7	1.7	2.6	1.8	1.8
Cycle Q Clear(g_c), s	3.5	0.0	0.0	6.6	0.0	0.0	0.4	1.7	1.7	2.6	1.8	1.8
Prop In Lane	0.52		0.29	0.38		0.53	1.00		0.18	1.00		0.32
Lane Grp Cap(c), veh/h	646	0	0	631	0	0	24	417	426	163	555	553
V/C Ratio(X)	0.35	0.00	0.00	0.57	0.00	0.00	0.95	0.26	0.27	0.84	0.23	0.23
Avail Cap(c_a), veh/h	928	0	0	936	0	0	916	1567	1598	916	1567	1560
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	0.0	10.0	0.0	0.0	16.5	10.4	10.4	15.0	8.4	8.5
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.8	0.0	0.0	71.0	0.5	0.5	11.1	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	1.7	0.0	0.0	3.0	0.0	0.0	0.7	0.9	0.9	1.7	0.9	0.9
LnGrp Delay(d),s/veh	9.4	0.0	0.0	10.8	0.0	0.0	87.5	10.9	10.9	26.1	8.7	8.8
LnGrp LOS	A			B			F	B	B	C	A	A
Approach Vol, veh/h		226			357			246			392	
Approach Delay, s/veh		9.4			10.8			18.0			14.8	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.1	12.0		14.5	4.5	14.6		14.5
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.0	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	4.6	3.7		8.6	2.4	3.8		5.5
Green Ext Time (p_c), s	0.3	4.1		2.7	0.0	4.1		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes

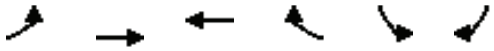
Intersection	
Int Delay, s/veh	27

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	23	52	192	14	123	37	118	298	118	265	46
Future Vol, veh/h	22	23	52	192	14	123	37	118	298	118	265	46
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	23	53	194	14	124	37	119	301	119	268	46

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	673	1028	162	731	901	211	317	0	0	421	0	0
Stage 1	532	532	-	345	345	-	-	-	-	-	-	-
Stage 2	141	496	-	386	556	-	-	-	-	-	-	-
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	339	231	851	308	275	791	1233	-	-	1128	-	-
Stage 1	496	521	-	641	632	-	-	-	-	-	-	-
Stage 2	845	541	-	606	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	245	200	847	236	238	790	1231	-	-	1128	-	-
Mov Cap-2 Maneuver	245	200	-	236	238	-	-	-	-	-	-	-
Stage 1	480	465	-	621	612	-	-	-	-	-	-	-
Stage 2	675	524	-	482	453	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.5	97.9	0.7	2.4
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1231	-	-	364	320	1128	-	-
HCM Lane V/C Ratio	0.03	-	-	0.269	1.039	0.106	-	-
HCM Control Delay (s)	8	-	-	18.5	97.9	8.6	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	12	0.4	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	227	76	96	226	243	266
Future Volume (vph)	227	76	96	226	243	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.89		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3108		3300	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3108		3300	1427
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	229	77	97	228	245	269
RTOR Reduction (vph)	0	0	178	0	46	125
Lane Group Flow (vph)	229	77	147	0	307	36
Confl. Peds. (#/hr)				2		
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	13.0	26.3	9.8		10.0	10.0
Effective Green, g (s)	12.5	26.3	9.8		10.0	10.0
Actuated g/C Ratio	0.28	0.59	0.22		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	494	2080	687		744	322
v/s Ratio Prot	c0.13	0.02	c0.05			
v/s Ratio Perm					c0.09	0.03
v/c Ratio	0.46	0.04	0.21		0.41	0.11
Uniform Delay, d1	13.1	3.7	14.1		14.6	13.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.0	0.3		0.4	0.2
Delay (s)	13.8	3.8	14.4		15.0	13.8
Level of Service	B	A	B		B	B
Approach Delay (s)		11.3	14.4		14.6	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	343	44	0	440	34	114
Future Vol, veh/h	343	44	0	440	34	114
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	377	48	0	484	37	125

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	648	215
Stage 1	-	-	-	-	402	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	403	790
Stage 1	-	-	0	-	644	-
Stage 2	-	-	0	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	401	788
Mov Cap-2 Maneuver	-	-	-	-	401	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	769	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	645	-	-	-
HCM Lane V/C Ratio	0.252	-	-	-
HCM Control Delay (s)	12.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1	-	-	-

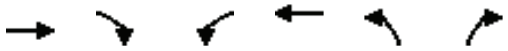
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	294	0	1	317	37	4	1	2	32	0	30
Future Vol, veh/h	68	294	0	1	317	37	4	1	2	32	0	30
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	342	0	1	369	43	4	1	2	37	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	412	0	-	342	0	0	687	914	171	723	-	206
Stage 1	-	-	-	-	-	-	500	500	-	393	-	-
Stage 2	-	-	-	-	-	-	187	414	-	330	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1143	-	0	1214	-	-	333	272	843	314	0	800
Stage 1	-	-	0	-	-	-	521	541	-	603	0	-
Stage 2	-	-	0	-	-	-	797	591	-	657	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1143	-	-	1214	-	-	301	253	843	295	-	800
Mov Cap-2 Maneuver	-	-	-	-	-	-	301	253	-	295	-	-
Stage 1	-	-	-	-	-	-	485	504	-	561	-	-
Stage 2	-	-	-	-	-	-	761	590	-	609	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	15.3	14.5
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	357	1143	-	1214	-	-	295	800
HCM Lane V/C Ratio	0.021	0.069	-	0.001	-	-	0.126	0.044
HCM Control Delay (s)	15.3	8.4	-	8	-	-	19	9.7
HCM Lane LOS	C	A	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.2	-	0	-	-	0.4	0.1



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	194	105	140	211	114	103
Future Volume (veh/h)	194	105	140	211	114	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	200	108	144	218	118	106
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	640	329	180	1860	359	319
Arrive On Green	0.28	0.28	0.10	0.52	0.20	0.20
Sat Flow, veh/h	2343	1157	1781	3647	1781	1585
Grp Volume(v), veh/h	156	152	144	218	118	106
Grp Sat Flow(s),veh/h/ln	1777	1630	1781	1777	1781	1585
Q Serve(g_s), s	2.0	2.1	2.3	0.9	1.6	1.7
Cycle Q Clear(g_c), s	2.0	2.1	2.3	0.9	1.6	1.7
Prop In Lane		0.71	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	506	464	180	1860	359	319
V/C Ratio(X)	0.31	0.33	0.80	0.12	0.33	0.33
Avail Cap(c_a), veh/h	1773	1626	1195	3546	2758	2454
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.2	8.2	12.8	3.5	9.9	9.9
Incr Delay (d2), s/veh	1.2	1.4	7.9	0.1	1.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	1.0	0.1	0.6	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.3	9.6	20.7	3.6	11.3	11.5
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	308			362	224	
Approach Delay, s/veh	9.5			10.4	11.4	
Approach LOS	A			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	6.9	12.3				19.2	9.9
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	4.3	4.1				2.9	3.7
Green Ext Time (p_c), s	0.3	4.2				3.1	2.1

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	107	116	51	113	33	110	148	43	39	213	136
Future Volume (veh/h)	83	107	116	51	113	33	110	148	43	39	213	136
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	113	0	54	119	0	116	156	0	41	224	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	169	810		118	707		201	945		92	728	
Arrive On Green	0.10	0.23	0.00	0.07	0.20	0.00	0.11	0.27	0.00	0.05	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	87	113	0	54	119	0	116	156	0	41	224	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.9	1.0	0.0	1.2	1.1	0.0	2.5	1.4	0.0	0.9	2.2	0.0
Cycle Q Clear(g_c), s	1.9	1.0	0.0	1.2	1.1	0.0	2.5	1.4	0.0	0.9	2.2	0.0
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	169	810		118	707		201	945		92	728	
V/C Ratio(X)	0.51	0.14		0.46	0.17		0.58	0.17		0.45	0.31	
Avail Cap(c_a), veh/h	1146	3322		1579	3322		1579	3322		1146	3322	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	12.7	0.0	18.5	13.7	0.0	17.3	11.6	0.0	19.0	13.9	0.0
Incr Delay (d2), s/veh	2.4	0.2	0.0	2.8	0.3	0.0	2.6	0.2	0.0	3.4	0.6	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	0.8	0.4	0.0	0.5	0.4	0.0	1.0	0.5	0.0	0.4	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	12.9	0.0	21.3	14.0	0.0	20.0	11.8	0.0	22.3	14.5	0.0
LnGrp LOS	C	B		C	B		B	B		C	B	
Approach Vol, veh/h		200	A		173	A		272	A		265	A
Approach Delay, s/veh		16.0			16.2			15.3			15.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	15.0	6.7	13.4	8.6	12.4	7.9	12.2
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.9	3.4	3.2	3.0	4.5	4.2	3.9	3.1
Green Ext Time (p_c), s	0.1	2.0	0.1	1.4	0.3	3.0	0.2	1.5

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	713	856	181	705	1	862	0	270	3	0	1
Future Volume (veh/h)	12	713	856	181	705	1	862	0	270	3	0	1
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	12	728	0	185	719	1	880	0	0	3	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	15	1223	547	226	2438	3	1130	0	504	2	0	0
Arrive On Green	0.01	0.35	0.00	0.13	0.47	0.46	0.32	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5193	7	3514	0	1568	1757	0	0
Grp Volume(v), veh/h	12	728	0	185	465	255	880	0	0	3	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1843	1757	0	1568	1757	0	0
Q Serve(g_s), s	0.5	13.4	0.0	8.1	6.7	6.7	17.9	0.0	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.5	13.4	0.0	8.1	6.7	6.7	17.9	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	15	1223	547	226	1576	865	1130	0	504	2	0	0
V/C Ratio(X)	0.82	0.60	0.00	0.82	0.29	0.29	0.78	0.00	0.00	1.35	0.00	0.00
Avail Cap(c_a), veh/h	212	1602	717	335	1576	865	1338	0	597	212	0	0
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.0	21.1	0.0	33.4	12.9	12.9	24.2	0.0	0.0	39.4	0.0	0.0
Incr Delay (d2), s/veh	67.0	1.0	0.0	9.6	0.2	0.4	3.4	0.0	0.0	411.7	0.0	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	42.4	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	6.6	0.0	4.5	3.1	3.5	9.2	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	106.0	22.1	0.0	43.0	13.1	13.3	27.6	0.0	0.0	493.5	0.0	0.0
LnGrp LOS	F	C		D	B	B	C			F		
Approach Vol, veh/h		740			905			880			3	
Approach Delay, s/veh		23.4			19.3			27.6			493.5	
Approach LOS		C			B			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.1	31.5		29.3	4.7	41.0		3.8
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	10.1	15.4		19.9	2.5	8.7		2.1
Green Ext Time (p_c), s	0.2	11.0		5.5	0.0	14.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.0
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	831	27	174	771	36	22	6	142	122	7	59
Future Volume (veh/h)	83	831	27	174	771	36	22	6	142	122	7	59
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	85	848	26	178	787	15	22	6	16	124	7	13
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	99	1612	49	216	1862	833	30	21	55	148	66	122
Arrive On Green	0.06	0.46	0.46	0.12	0.53	0.53	0.02	0.05	0.05	0.08	0.11	0.11
Sat Flow, veh/h	1757	3472	106	1757	3505	1568	1757	441	1176	1757	575	1068
Grp Volume(v), veh/h	85	428	446	178	787	15	22	0	22	124	0	20
Grp Sat Flow(s),veh/h/ln	1757	1752	1826	1757	1752	1568	1757	0	1617	1757	0	1643
Q Serve(g_s), s	2.7	9.9	9.9	5.6	7.7	0.3	0.7	0.0	0.7	4.0	0.0	0.6
Cycle Q Clear(g_c), s	2.7	9.9	9.9	5.6	7.7	0.3	0.7	0.0	0.7	4.0	0.0	0.6
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.73	1.00		0.65
Lane Grp Cap(c), veh/h	99	814	848	216	1862	833	30	0	76	148	0	188
V/C Ratio(X)	0.86	0.53	0.53	0.82	0.42	0.02	0.74	0.00	0.29	0.84	0.00	0.11
Avail Cap(c_a), veh/h	602	923	962	602	1862	833	602	0	710	540	0	635
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.6	10.8	10.8	24.4	8.1	6.3	27.9	0.0	26.2	25.7	0.0	22.6
Incr Delay (d2), s/veh	18.9	1.1	1.1	7.6	0.3	0.0	29.1	0.0	2.9	11.5	0.0	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	1.8	5.0	5.2	3.2	3.8	0.1	0.6	0.0	0.4	2.4	0.0	0.3
LnGrp Delay(d),s/veh	45.5	11.9	11.9	32.0	8.4	6.3	56.9	0.0	29.1	37.2	0.0	22.8
LnGrp LOS	D	B	B	C	A	A	E		C	D		C
Approach Vol, veh/h		959			980			44			144	
Approach Delay, s/veh		14.9			12.6			43.0			35.2	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	30.4	8.8	6.7	7.2	34.2	5.0	10.5
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	7.6	11.9	6.0	2.7	4.7	9.7	2.7	2.6
Green Ext Time (p_c), s	0.4	14.6	0.2	0.2	0.1	16.2	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	441	105	414	313	121	99	52	395	105	39	36
Future Volume (veh/h)	53	441	105	414	313	121	99	52	395	105	39	36
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	54	450	88	422	319	96	101	53	56	107	40	4
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	71	933	181	481	1473	436	119	158	133	127	167	142
Arrive On Green	0.04	0.32	0.31	0.27	0.55	0.54	0.07	0.09	0.09	0.07	0.09	0.09
Sat Flow, veh/h	1757	2926	568	1757	2667	789	1757	1845	1558	1757	1845	1563
Grp Volume(v), veh/h	54	268	270	422	208	207	101	53	56	107	40	4
Grp Sat Flow(s),veh/h/ln	1757	1752	1742	1757	1752	1704	1757	1845	1558	1757	1845	1563
Q Serve(g_s), s	2.0	7.9	8.0	14.7	3.9	4.0	3.6	1.7	2.2	3.9	1.3	0.1
Cycle Q Clear(g_c), s	2.0	7.9	8.0	14.7	3.9	4.0	3.6	1.7	2.2	3.9	1.3	0.1
Prop In Lane	1.00		0.33	1.00		0.46	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	71	559	556	481	968	941	119	158	133	127	167	142
V/C Ratio(X)	0.76	0.48	0.49	0.88	0.21	0.22	0.85	0.34	0.42	0.84	0.24	0.03
Avail Cap(c_a), veh/h	493	1257	1250	1260	2077	2020	384	748	632	521	978	829
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	30.5	17.6	17.7	22.3	7.3	7.4	29.6	27.6	27.8	29.4	27.1	26.6
Incr Delay (d2), s/veh	15.3	0.9	0.9	5.3	0.2	0.2	15.4	1.2	2.1	13.4	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	1.2	3.9	4.0	7.9	1.9	1.9	2.3	0.9	1.0	2.3	0.7	0.1
LnGrp Delay(d),s/veh	45.8	18.5	18.6	27.6	7.5	7.6	45.0	28.9	29.9	42.8	27.8	26.7
LnGrp LOS	D	B	B	C	A	A	D	C	C	D	C	C
Approach Vol, veh/h		592			837			210			151	
Approach Delay, s/veh		21.0			17.6			36.9			38.4	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	24.4	8.7	9.5	6.6	39.4	8.3	9.8
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	16.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	16.7	10.0	5.9	4.2	4.0	6.0	5.6	3.3
Green Ext Time (p_c), s	1.3	9.7	0.2	0.6	0.1	10.7	0.1	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	29	93	136	39	209	34	213	43	153	188	117
Future Volume (veh/h)	140	29	93	136	39	209	34	213	43	153	188	117
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	143	30	76	139	40	173	35	217	24	156	192	36
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	390	99	142	300	93	237	47	748	82	185	925	170
Arrive On Green	0.31	0.31	0.32	0.31	0.31	0.32	0.03	0.23	0.23	0.11	0.31	0.31
Sat Flow, veh/h	728	324	462	497	303	773	1757	3187	349	1757	2956	544
Grp Volume(v), veh/h	249	0	0	352	0	0	35	118	123	156	112	116
Grp Sat Flow(s),veh/h/ln	1514	0	0	1573	0	0	1757	1752	1783	1757	1752	1748
Q Serve(g_s), s	0.0	0.0	0.0	2.2	0.0	0.0	0.7	1.9	1.9	3.0	1.6	1.7
Cycle Q Clear(g_c), s	4.1	0.0	0.0	6.4	0.0	0.0	0.7	1.9	1.9	3.0	1.6	1.7
Prop In Lane	0.57		0.31	0.39		0.49	1.00		0.20	1.00		0.31
Lane Grp Cap(c), veh/h	632	0	0	631	0	0	47	411	418	185	549	547
V/C Ratio(X)	0.39	0.00	0.00	0.56	0.00	0.00	0.75	0.29	0.29	0.85	0.20	0.21
Avail Cap(c_a), veh/h	906	0	0	934	0	0	906	1548	1576	906	1548	1544
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	0.0	0.0	10.2	0.0	0.0	16.4	10.7	10.7	14.9	8.6	8.6
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.8	0.0	0.0	20.7	0.5	0.5	10.1	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	1.9	0.0	0.0	3.0	0.0	0.0	0.6	0.9	1.0	1.9	0.8	0.8
LnGrp Delay(d),s/veh	9.9	0.0	0.0	10.9	0.0	0.0	37.1	11.2	11.2	25.0	8.8	8.9
LnGrp LOS	A			B			D	B	B	C	A	A
Approach Vol, veh/h		249			352			276			384	
Approach Delay, s/veh		9.9			10.9			14.5			15.4	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.6	12.0		14.4	4.9	14.6		14.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.0	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	5.0	3.9		8.4	2.7	3.7		6.1
Green Ext Time (p_c), s	0.3	4.0		2.8	0.0	4.1		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Notes

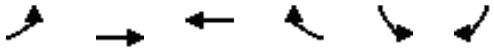
Intersection	
Int Delay, s/veh	21.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	15	65	191	18	106	33	163	276	85	300	32
Future Vol, veh/h	21	15	65	191	18	106	33	163	276	85	300	32
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	21	15	66	195	18	108	34	166	282	87	306	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	658	1011	169	708	886	226	339	0	0	448	0	0
Stage 1	496	496	-	374	374	-	-	-	-	-	-	-
Stage 2	162	515	-	334	512	-	-	-	-	-	-	-
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	348	236	842	320	280	774	1210	-	-	1102	-	-
Stage 1	522	541	-	616	614	-	-	-	-	-	-	-
Stage 2	821	531	-	651	532	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	260	211	842	256	251	773	1210	-	-	1100	-	-
Mov Cap-2 Maneuver	260	211	-	256	251	-	-	-	-	-	-	-
Stage 1	507	498	-	599	597	-	-	-	-	-	-	-
Stage 2	664	516	-	535	490	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	79.5	0.6	1.7
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1210	-	-	441	330	1100	-	-
HCM Lane V/C Ratio	0.028	-	-	0.234	0.974	0.079	-	-
HCM Control Delay (s)	8.1	-	-	15.6	79.5	8.6	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	10.5	0.3	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	211	133	90	261	327	229
Future Volume (vph)	211	133	90	261	327	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.89		0.98	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3114		3358	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3114		3358	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	215	136	92	266	334	234
RTOR Reduction (vph)	0	0	207	0	12	134
Lane Group Flow (vph)	215	136	151	0	378	44
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	12.5	26.0	10.0		11.1	11.1
Effective Green, g (s)	12.0	26.0	10.0		11.1	11.1
Actuated g/C Ratio	0.27	0.58	0.22		0.25	0.25
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	466	2020	690		826	351
v/s Ratio Prot	c0.12	0.04	c0.05			
v/s Ratio Perm					c0.11	0.03
v/c Ratio	0.46	0.07	0.22		0.46	0.12
Uniform Delay, d1	13.8	4.2	14.4		14.4	13.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.0	0.3		0.4	0.2
Delay (s)	14.6	4.2	14.7		14.8	13.4
Level of Service	B	A	B		B	B
Approach Delay (s)		10.6	14.7		14.4	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	45.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	372	55	0	486	28	141
Future Vol, veh/h	372	55	0	486	28	141
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	409	60	0	534	31	155

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	711	237
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	368	764
Stage 1	-	-	0	-	616	-
Stage 2	-	-	0	-	750	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	366	762
Mov Cap-2 Maneuver	-	-	-	-	366	-
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	747	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	646	-	-	-
HCM Lane V/C Ratio	0.287	-	-	-
HCM Control Delay (s)	12.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.2	-	-	-

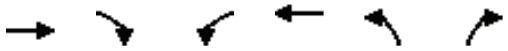
Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	91	380	0	0	281	57	6	0	2	49	0	32
Future Vol, veh/h	91	380	0	0	281	57	6	0	2	49	0	32
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	96	96	92	92	92	96	92	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	396	0	0	293	59	7	0	2	51	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	352	0	-	396	0	0	733	938	198	711	-	176
Stage 1	-	-	-	-	-	-	586	586	-	323	-	-
Stage 2	-	-	-	-	-	-	147	352	-	388	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1203	-	0	1159	-	-	309	263	810	320	0	837
Stage 1	-	-	0	-	-	-	463	495	-	663	0	-
Stage 2	-	-	0	-	-	-	841	630	-	607	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1203	-	-	1159	-	-	279	242	810	300	-	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	242	-	300	-	-
Stage 1	-	-	-	-	-	-	426	456	-	611	-	-
Stage 2	-	-	-	-	-	-	808	630	-	558	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	16.1	15.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	334	1203	-	1159	-	-	300	837
HCM Lane V/C Ratio	0.026	0.079	-	-	-	-	0.17	0.04
HCM Control Delay (s)	16.1	8.2	-	0	-	-	19.4	9.5
HCM Lane LOS	C	A	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.3	-	0	-	-	0.6	0.1



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	262	124	161	235	129	190
Future Volume (veh/h)	262	124	161	235	129	190
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	270	128	166	242	133	196
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	719	331	201	1885	433	385
Arrive On Green	0.30	0.30	0.11	0.53	0.24	0.24
Sat Flow, veh/h	2455	1088	1781	3647	1781	1585
Grp Volume(v), veh/h	201	197	166	242	133	196
Grp Sat Flow(s),veh/h/ln	1777	1672	1781	1777	1781	1585
Q Serve(g_s), s	3.1	3.3	3.2	1.2	2.2	3.8
Cycle Q Clear(g_c), s	3.1	3.3	3.2	1.2	2.2	3.8
Prop In Lane		0.65	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	541	509	201	1885	433	385
V/C Ratio(X)	0.37	0.39	0.83	0.13	0.31	0.51
Avail Cap(c_a), veh/h	1458	1372	983	2916	2268	2018
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	9.6	9.7	15.3	4.2	10.9	11.5
Incr Delay (d2), s/veh	1.5	1.6	8.3	0.1	1.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	1.5	0.2	0.8	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.1	11.3	23.7	4.3	12.0	14.2
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	398			408	329	
Approach Delay, s/veh	11.2			12.2	13.3	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.0	14.8				22.7	12.6
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.2	5.3				3.2	5.8
Green Ext Time (p_c), s	0.4	5.4				3.5	3.2

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	152	160	41	109	30	138	193	64	32	247	150
Future Volume (veh/h)	127	152	160	41	109	30	138	193	64	32	247	150
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	131	157	0	42	112	0	142	199	0	33	255	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	924		94	697		215	988		74	707	
Arrive On Green	0.12	0.26	0.00	0.05	0.20	0.00	0.12	0.28	0.00	0.04	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	131	157	0	42	112	0	142	199	0	33	255	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.1	1.5	0.0	1.0	1.1	0.0	3.3	1.9	0.0	0.8	2.7	0.0
Cycle Q Clear(g_c), s	3.1	1.5	0.0	1.0	1.1	0.0	3.3	1.9	0.0	0.8	2.7	0.0
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	207	924		94	697		215	988		74	707	
V/C Ratio(X)	0.63	0.17		0.45	0.16		0.66	0.20		0.45	0.36	
Avail Cap(c_a), veh/h	1085	3146		1495	3146		1495	3146		1085	3146	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.3	12.5	0.0	20.0	14.5	0.0	18.3	12.0	0.0	20.4	15.0	0.0
Incr Delay (d2), s/veh	3.2	0.2	0.0	3.3	0.3	0.0	3.5	0.3	0.0	4.2	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	1.3	0.5	0.0	0.4	0.4	0.0	1.4	0.6	0.0	0.4	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.5	12.7	0.0	23.3	14.8	0.0	21.7	12.3	0.0	24.6	15.8	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		288	A		154	A		341	A		288	A
Approach Delay, s/veh		16.7			17.1			16.2			16.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.8	16.1	6.3	15.3	9.2	12.7	9.1	12.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.8	3.9	3.0	3.5	5.3	4.7	5.1	3.1
Green Ext Time (p_c), s	0.1	2.7	0.1	2.0	0.4	3.5	0.3	1.4

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	451	1181	214	543	0	935	0	262	0	0	4
Future Volume (veh/h)	21	451	1181	214	543	0	935	0	262	0	0	4
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	22	465	0	221	560	0	964	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	31	1054	471	270	2199	0	1292	0	577	0	3	0
Arrive On Green	0.02	0.30	0.00	0.15	0.44	0.00	0.37	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	22	465	0	221	560	0	964	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.8	7.2	0.0	8.2	4.8	0.0	16.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	7.2	0.0	8.2	4.8	0.0	16.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	31	1054	471	270	2199	0	1292	0	577	0	3	0
V/C Ratio(X)	0.71	0.44	0.00	0.82	0.25	0.00	0.75	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	248	1872	837	391	2690	0	1564	0	698	0	260	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	19.0	0.0	27.6	12.0	0.0	18.6	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	25.7	0.6	0.0	8.7	0.1	0.0	2.4	0.0	0.0	0.0	0.0	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	0.6	3.6	0.0	4.6	2.2	0.0	8.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	58.7	19.6	0.0	36.3	12.2	0.0	20.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	E	B		D	B		C					
Approach Vol, veh/h		487			781			964			0	
Approach Delay, s/veh		21.4			19.0			20.9			0.0	
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	24.3		28.8	5.2	33.4		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	10.2	9.2		18.1	2.8	6.8		0.0
Green Ext Time (p_c), s	0.3	10.1		6.7	0.0	10.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	982	55	291	1070	34	44	8	136	104	9	84
Future Volume (veh/h)	80	982	55	291	1070	34	44	8	136	104	9	84
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	82	1012	54	300	1103	15	45	8	14	107	9	13
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	1448	77	349	2006	897	63	19	32	126	46	66
Arrive On Green	0.05	0.43	0.43	0.20	0.57	0.57	0.04	0.03	0.03	0.07	0.07	0.07
Sat Flow, veh/h	1757	3385	181	1757	3505	1568	1757	603	1055	1757	683	987
Grp Volume(v), veh/h	82	524	542	300	1103	15	45	0	22	107	0	22
Grp Sat Flow(s),veh/h/ln	1757	1752	1813	1757	1752	1568	1757	0	1658	1757	0	1670
Q Serve(g_s), s	2.7	14.4	14.4	9.7	11.6	0.2	1.5	0.0	0.8	3.6	0.0	0.7
Cycle Q Clear(g_c), s	2.7	14.4	14.4	9.7	11.6	0.2	1.5	0.0	0.8	3.6	0.0	0.7
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.64	1.00		0.59
Lane Grp Cap(c), veh/h	95	750	776	349	2006	897	63	0	51	126	0	112
V/C Ratio(X)	0.86	0.70	0.70	0.86	0.55	0.02	0.72	0.00	0.43	0.85	0.00	0.20
Avail Cap(c_a), veh/h	580	890	921	580	2006	897	580	0	702	520	0	622
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.7	13.8	13.8	22.9	7.9	5.5	28.2	0.0	28.1	27.1	0.0	26.1
Incr Delay (d2), s/veh	19.5	3.0	2.9	6.9	0.6	0.0	14.1	0.0	8.0	14.1	0.0	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	1.8	7.5	7.7	5.3	5.7	0.1	1.0	0.0	0.5	2.2	0.0	0.4
LnGrp Delay(d),s/veh	47.2	16.8	16.7	29.8	8.4	5.5	42.3	0.0	36.1	41.2	0.0	26.9
LnGrp LOS	D	B	B	C	A	A	D		D	D		C
Approach Vol, veh/h		1148			1418			67			129	
Approach Delay, s/veh		19.0			12.9			40.3			38.8	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	29.3	8.2	5.8	7.2	37.8	6.1	8.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.6	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	11.7	16.4	5.6	2.8	4.7	13.6	3.5	2.7
Green Ext Time (p_c), s	0.6	8.9	0.2	0.2	0.1	15.2	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	492	133	515	398	205	127	67	466	159	103	107
Future Volume (veh/h)	131	492	133	515	398	205	127	67	466	159	103	107
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	135	507	114	531	410	157	131	69	134	164	106	18
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	158	832	186	567	1307	495	153	224	188	189	262	216
Arrive On Green	0.09	0.29	0.29	0.32	0.53	0.52	0.09	0.12	0.12	0.11	0.14	0.14
Sat Flow, veh/h	1757	2843	636	1757	2488	942	1757	1845	1552	1757	1845	1521
Grp Volume(v), veh/h	135	312	309	531	287	280	131	69	134	164	106	18
Grp Sat Flow(s),veh/h/ln	1757	1752	1726	1757	1752	1678	1757	1845	1552	1757	1845	1521
Q Serve(g_s), s	7.8	15.7	15.9	30.2	9.6	9.8	7.6	3.5	8.5	9.5	5.4	1.1
Cycle Q Clear(g_c), s	7.8	15.7	15.9	30.2	9.6	9.8	7.6	3.5	8.5	9.5	5.4	1.1
Prop In Lane	1.00		0.37	1.00		0.56	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	158	513	505	567	920	881	153	224	188	189	262	216
V/C Ratio(X)	0.85	0.61	0.61	0.94	0.31	0.32	0.86	0.31	0.71	0.87	0.40	0.08
Avail Cap(c_a), veh/h	307	783	771	785	1294	1239	239	466	392	324	609	502
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	46.1	31.3	31.5	33.8	13.9	14.0	46.3	41.3	43.5	45.2	40.2	38.3
Incr Delay (d2), s/veh	12.0	1.7	1.7	15.0	0.3	0.3	16.3	0.8	4.9	11.6	1.0	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	4.3	7.9	7.8	17.0	4.7	4.6	4.4	1.8	3.9	5.2	2.8	0.5
LnGrp Delay(d),s/veh	58.1	33.0	33.2	48.9	14.1	14.3	62.6	42.1	48.4	56.7	41.2	38.5
LnGrp LOS	E	C	C	D	B	B	E	D	D	E	D	D
Approach Vol, veh/h		756			1098			334			288	
Approach Delay, s/veh		37.6			31.0			52.7			49.9	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	34.1	15.1	16.5	13.3	58.1	13.0	18.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	16.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	11.8	17.9	11.5	10.5	9.8	11.8	9.6	7.4
Green Ext Time (p_c), s	1.5	11.7	0.3	1.3	0.2	14.9	0.1	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	38.1
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	72	117	157	82	237	61	247	49	211	248	171
Future Volume (veh/h)	188	72	117	157	82	237	61	247	49	211	248	171
Number	3	8	18	7	4	14	5	2	12	1	6	16
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		0.99	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	194	74	105	162	85	210	63	255	31	218	256	48
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	319	121	125	265	129	243	87	731	88	267	988	183
Arrive On Green	0.35	0.35	0.36	0.35	0.35	0.36	0.05	0.23	0.23	0.15	0.33	0.33
Sat Flow, veh/h	564	345	356	448	367	693	1757	3148	379	1757	2953	545
Grp Volume(v), veh/h	373	0	0	457	0	0	63	141	145	218	150	154
Grp Sat Flow(s),veh/h/ln	1264	0	0	1508	0	0	1757	1752	1774	1757	1752	1746
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	1.6	3.0	3.1	5.4	2.8	2.9
Cycle Q Clear(g_c), s	12.4	0.0	0.0	12.5	0.0	0.0	1.6	3.0	3.1	5.4	2.8	2.9
Prop In Lane	0.52		0.28	0.35		0.46	1.00		0.21	1.00		0.31
Lane Grp Cap(c), veh/h	564	0	0	637	0	0	87	407	412	267	587	585
V/C Ratio(X)	0.66	0.00	0.00	0.72	0.00	0.00	0.73	0.35	0.35	0.82	0.26	0.26
Avail Cap(c_a), veh/h	611	0	0	689	0	0	680	1162	1176	680	1162	1158
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	0.0	13.4	0.0	0.0	21.2	14.5	14.5	18.6	11.0	11.0
Incr Delay (d2), s/veh	2.4	0.0	0.0	3.3	0.0	0.0	10.9	0.7	0.7	6.1	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	4.6	0.0	0.0	5.8	0.0	0.0	1.0	1.5	1.6	3.1	1.4	1.4
LnGrp Delay(d),s/veh	15.6	0.0	0.0	16.7	0.0	0.0	32.1	15.2	15.3	24.6	11.3	11.3
LnGrp LOS	B			B			C	B	B	C	B	B
Approach Vol, veh/h		373			457			349			522	
Approach Delay, s/veh		15.6			16.7			18.3			16.9	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	14.5		19.9	6.2	19.1		19.9
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	7.4	5.1		14.5	3.6	4.9		14.4
Green Ext Time (p_c), s	0.4	5.2		1.8	0.1	5.2		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.8
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	90.6

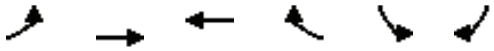
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	29	82	190	31	136	53	193	320	123	337	62
Future Vol, veh/h	28	29	82	190	31	136	53	193	320	123	337	62
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	30	85	196	32	140	55	199	330	127	347	64

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	859	1273	207	918	1140	267	411	0	0	531	0	0
Stage 1	633	633	-	475	475	-	-	-	-	-	-	-
Stage 2	226	640	-	443	665	-	-	-	-	-	-	-
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	248	165	796	225	198	728	1137	-	-	1026	-	-
Stage 1	432	469	-	537	553	-	-	-	-	-	-	-
Stage 2	753	466	-	561	454	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	149	137	795	~ 146	165	726	1136	-	-	1025	-	-
Mov Cap-2 Maneuver	149	137	-	~ 146	165	-	-	-	-	-	-	-
Stage 1	411	411	-	510	525	-	-	-	-	-	-	-
Stage 2	542	443	-	407	398	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.3	$ 385.6	0.8	2.1
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1136	-	-	276	213	1025	-	-
HCM Lane V/C Ratio	0.048	-	-	0.519	1.728	0.124	-	-
HCM Control Delay (s)	8.3	-	-	31.3	$ 385.6	9	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.8	24.9	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	256	157	104	310	299	310
Future Volume (vph)	256	157	104	310	299	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.89		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3111		3306	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3111		3306	1427
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	264	162	107	320	308	320
RTOR Reduction (vph)	0	0	253	0	38	152
Lane Group Flow (vph)	264	162	174	0	392	46
Confl. Peds. (#/hr)					1	
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	16.7	30.7	10.5		11.8	11.8
Effective Green, g (s)	16.2	30.7	10.5		11.8	11.8
Actuated g/C Ratio	0.32	0.61	0.21		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	562	2130	646		772	333
v/s Ratio Prot	c0.15	0.05	c0.06			
v/s Ratio Perm					c0.12	0.03
v/c Ratio	0.47	0.08	0.27		0.51	0.14
Uniform Delay, d1	13.7	4.1	16.8		16.8	15.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.0	0.5		0.5	0.2
Delay (s)	14.3	4.1	17.2		17.4	15.5
Level of Service	B	A	B		B	B
Approach Delay (s)		10.4	17.2		16.8	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	382	66	0	608	48	136
Future Vol, veh/h	382	66	0	608	48	136
Conflicting Peds, #/hr	0	2	2	0	4	3
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	394	68	0	627	49	140

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	747	236
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	317	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	349	766
Stage 1	-	-	0	-	624	-
Stage 2	-	-	0	-	711	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	347	762
Mov Cap-2 Maneuver	-	-	-	-	347	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	581	-	-	-
HCM Lane V/C Ratio	0.326	-	-	-
HCM Control Delay (s)	14.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.4	-	-	-

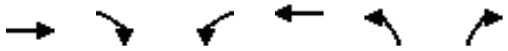
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	332	0	1	325	63	5	1	1	43	0	36
Future Vol, veh/h	107	332	0	1	325	63	5	1	1	43	0	36
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	95	95	92	92	92	95	92	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	349	0	1	342	66	5	1	1	45	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	408	0	-	349	0	0	748	985	175	778	-	204
Stage 1	-	-	-	-	-	-	575	575	-	377	-	-
Stage 2	-	-	-	-	-	-	173	410	-	401	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1147	-	0	1207	-	-	301	247	838	286	0	803
Stage 1	-	-	0	-	-	-	470	501	-	616	0	-
Stage 2	-	-	0	-	-	-	812	594	-	597	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1147	-	-	1207	-	-	265	222	838	263	-	803
Mov Cap-2 Maneuver	-	-	-	-	-	-	265	222	-	263	-	-
Stage 1	-	-	-	-	-	-	423	451	-	555	-	-
Stage 2	-	-	-	-	-	-	773	593	-	536	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	18	16.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	285	1147	-	1207	-	-	263	803
HCM Lane V/C Ratio	0.027	0.098	-	0.001	-	-	0.172	0.047
HCM Control Delay (s)	18	8.5	-	8	-	-	21.5	9.7
HCM Lane LOS	C	A	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.1	0.3	-	0	-	-	0.6	0.1



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	235	114	147	218	128	203
Future Volume (veh/h)	235	114	147	218	128	203
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	250	121	156	232	136	216
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	678	318	210	1803	469	417
Arrive On Green	0.29	0.29	0.12	0.51	0.26	0.26
Sat Flow, veh/h	2441	1101	1781	3647	1781	1585
Grp Volume(v), veh/h	187	184	156	232	136	216
Grp Sat Flow(s),veh/h/ln	1777	1672	1781	1777	1781	1585
Q Serve(g_s), s	2.9	3.1	3.0	1.2	2.1	4.1
Cycle Q Clear(g_c), s	2.9	3.1	3.0	1.2	2.1	4.1
Prop In Lane		0.66	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	513	483	210	1803	469	417
V/C Ratio(X)	0.36	0.38	0.74	0.13	0.29	0.52
Avail Cap(c_a), veh/h	1478	1391	1022	2957	2300	2046
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	9.9	9.9	14.9	4.5	10.2	11.0
Incr Delay (d2), s/veh	1.5	1.7	5.1	0.1	0.9	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	1.0	1.2	0.2	0.8	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.3	11.6	19.9	4.6	11.1	13.6
LnGrp LOS	B	B	B	A	B	B
Approach Vol, veh/h	371			388	352	
Approach Delay, s/veh	11.5			10.8	12.6	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.6	14.1				21.7	13.2
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.0	5.1				3.2	6.1
Green Ext Time (p_c), s	0.3	5.0				3.4	3.4

Intersection Summary			
HCM 6th Ctrl Delay		11.6	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	150	143	33	114	53	117	244	47	31	240	141
Future Volume (veh/h)	142	150	143	33	114	53	117	244	47	31	240	141
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	156	0	34	119	0	122	254	0	32	250	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	239	941		97	657		221	927		92	669	
Arrive On Green	0.13	0.26	0.00	0.05	0.18	0.00	0.12	0.26	0.00	0.05	0.19	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	148	156	0	34	119	0	122	254	0	32	250	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.4	1.5	0.0	0.8	1.2	0.0	2.8	2.5	0.0	0.8	2.7	0.0
Cycle Q Clear(g_c), s	3.4	1.5	0.0	0.8	1.2	0.0	2.8	2.5	0.0	0.8	2.7	0.0
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	239	941		97	657		221	927		92	669	
V/C Ratio(X)	0.62	0.17		0.35	0.18		0.55	0.27		0.35	0.37	
Avail Cap(c_a), veh/h	1108	3110		1518	3110		1518	3110		1108	3110	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.8	12.3	0.0	19.8	14.9	0.0	17.9	12.8	0.0	19.9	15.4	0.0
Incr Delay (d2), s/veh	2.6	0.2	0.0	2.2	0.3	0.0	2.1	0.4	0.0	2.2	0.9	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	1.4	0.5	0.0	0.3	0.4	0.0	1.1	0.8	0.0	0.3	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	12.5	0.0	22.0	15.3	0.0	20.0	13.2	0.0	22.1	16.3	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		304	A		153	A		376	A		282	A
Approach Delay, s/veh		16.3			16.8			15.4			17.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	15.8	5.9	16.0	8.9	12.7	9.3	12.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.8	4.5	2.8	3.5	4.8	4.7	5.4	3.2
Green Ext Time (p_c), s	0.0	3.5	0.1	2.0	0.3	3.4	0.4	1.5

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	888	375	42	865	1	254	0	60	1	0	0
Future Volume (veh/h)	9	888	375	42	865	1	254	0	60	1	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	9	906	0	43	883	1	259	0	0	1	0	-1
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	4	1705	763	83	2777	3	582	0	260	0	0	982
Arrive On Green	0.00	0.49	0.00	0.05	0.53	0.51	0.17	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5195	6	3514	0	1568	-14597	-1	14597
Grp Volume(v), veh/h	9	906	0	43	571	313	259	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1844	1757	0	1568	0	0	0
Q Serve(g_s), s	0.1	7.1	0.0	1.0	3.8	3.8	2.7	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	7.1	0.0	1.0	3.8	3.8	2.7	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	10000.00		-10000.00
Lane Grp Cap(c), veh/h	4	1705	763	83	1794	985	582	0	260	0	0	0
V/C Ratio(X)	2.05	0.53	0.00	0.52	0.32	0.32	0.45	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	418	3160	1414	660	3027	1662	2640	0	1178	0	0	0
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	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	20.0	7.1	0.0	18.6	5.2	5.2	15.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	604.9	0.6	0.0	4.8	0.2	0.4	1.1	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	199.9	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	1.3	3.5	0.0	0.6	1.8	2.0	1.4	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	824.7	7.7	0.0	23.4	5.4	5.6	16.1	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	A		C	A	A	B					
Approach Vol, veh/h		915			927			259			0	
Approach Delay, s/veh		15.7			6.3			16.1			0.0	
Approach LOS		B			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	23.4		10.6	4.0	25.3		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	3.0	9.1		4.7	2.1	5.8		0.0
Green Ext Time (p_c), s	0.1	9.3		2.4	0.0	8.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.6
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	324	9	49	418	15	2	0	20	41	1	19
Future Volume (veh/h)	39	324	9	49	418	15	2	0	20	41	1	19
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	40	331	7	50	427	-5	2	0	-108	42	1	-29
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	47	1388	29	66	1423	637	8	0	363	51	0	319
Arrive On Green	0.03	0.40	0.40	0.04	0.41	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Sat Flow, veh/h	1757	3510	74	1757	3505	1568	1757	1845	0	1757	1845	0
Grp Volume(v), veh/h	40	165	173	50	427	-5	2	-108	-108	42	-28	-28
Grp Sat Flow(s),veh/h/ln	1757	1752	1832	1757	1752	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	0.5	1.4	1.4	0.6	1.8	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Cycle Q Clear(g_c), s	0.5	1.4	1.4	0.6	1.8	0.0	0.0	0.0	0.0	0.5	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	47	693	724	66	1423	637	8	0	0	51	0	0
V/C Ratio(X)	0.85	0.24	0.24	0.76	0.30	-0.01	0.25	0.00	0.00	0.83	0.00	0.00
Avail Cap(c_a), veh/h	1537	2358	2465	1537	4717	2110	1537	0	0	1379	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.8	4.5	4.5	10.6	4.5	0.0	11.1	0.0	0.0	10.8	0.0	0.0
Incr Delay (d2), s/veh	31.9	0.4	0.4	16.6	0.3	0.0	16.0	0.0	0.0	27.0	0.0	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	0.6	0.7	0.7	0.6	0.9	0.0	0.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	42.7	4.9	4.9	27.2	4.7	0.0	27.1	0.0	0.0	37.8	0.0	0.0
LnGrp LOS	D	A	A	C	A		C			D		
Approach Vol, veh/h		378			472			-214			-14	
Approach Delay, s/veh		8.9			7.2			-0.3			-113.4	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	12.8	4.6	0.0	4.6	13.1	3.6	1.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	2.6	3.4	2.5	0.0	2.5	3.8	2.0	0.0
Green Ext Time (p_c), s	0.1	3.7	0.1	0.0	0.1	5.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.5
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	186	24	125	196	121	12	17	109	77	16	26
Future Volume (veh/h)	33	186	24	125	196	121	12	17	109	77	16	26
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	34	190	18	128	200	57	12	17	12	79	16	6
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	42	763	72	165	828	230	6	91	78	112	212	180
Arrive On Green	0.02	0.24	0.22	0.09	0.31	0.29	0.00	0.05	0.05	0.06	0.12	0.12
Sat Flow, veh/h	1757	3238	304	1757	2710	753	1757	1845	1563	1757	1845	1566
Grp Volume(v), veh/h	34	102	106	128	127	130	12	17	12	79	16	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1790	1757	1752	1710	1757	1845	1563	1757	1845	1566
Q Serve(g_s), s	0.6	1.4	1.4	2.0	1.6	1.6	0.1	0.3	0.2	1.3	0.2	0.1
Cycle Q Clear(g_c), s	0.6	1.4	1.4	2.0	1.6	1.6	0.1	0.3	0.2	1.3	0.2	0.1
Prop In Lane	1.00		0.17	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	42	413	422	165	535	523	6	91	78	112	212	180
V/C Ratio(X)	0.81	0.25	0.25	0.78	0.24	0.25	1.96	0.19	0.15	0.70	0.08	0.03
Avail Cap(c_a), veh/h	1101	2806	2865	2813	4636	4524	856	1669	1415	1162	2183	1853
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	14.0	8.9	9.0	12.7	7.5	7.6	14.4	13.1	13.1	13.2	11.3	11.3
Incr Delay (d2), s/veh	29.1	0.4	0.4	7.6	0.3	0.3	537.5	1.0	0.9	7.7	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	92.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.7	1.3	0.8	0.8	1.5	0.2	0.1	0.8	0.1	0.0
LnGrp Delay(d),s/veh	43.0	9.4	9.4	20.3	7.8	7.9	644.0	14.1	14.0	20.9	11.5	11.4
LnGrp LOS	D	A	A	C	A	A	F	B	B	C	B	B
Approach Vol, veh/h		242			385			41			101	
Approach Delay, s/veh		14.1			12.0			198.4			18.9	
Approach LOS		B			B			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	10.8	5.8	5.4	4.7	12.8	4.0	7.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	4.0	3.4	3.3	2.3	2.6	3.6	2.1	2.2
Green Ext Time (p_c), s	0.4	1.8	0.1	0.1	0.0	2.3	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	3	5	2	4	7	22	114	0	0	98	54
Future Volume (veh/h)	17	3	5	2	4	7	22	114	0	0	98	54
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	17	3	-15	2	4	-55	22	116	0	0	100	-32
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	556	1581	0	0	15	371	13	2499	0	13	1516	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.71	0.00	0.00	0.43	0.00
Sat Flow, veh/h	5360	946	-4730	NAN	NAN	NAN	1757	3597	0	1757	3597	0
Grp Volume(v), veh/h	0	0	0	0	0	0	22	116	0	0	68	0
Grp Sat Flow(s),veh/h/ln	0	0	0	0	0	0	1757	1752	0	1757	1752	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.0
Prop In Lane	3.40		-3.00	-0.04		1.12	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	0	0	0	0	13	2499	0	13	1516	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00	1.75	0.05	0.00	0.00	0.04	0.00
Avail Cap(c_a), veh/h	0	0	0	0	0	0	2206	7545	0	2206	7545	0
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)	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.6	0.0	0.0	2.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	396.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.1	0.0	0.0	0.1	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	404.7	0.6	0.0	0.0	2.3	0.0
LnGrp LOS							F	A			A	
Approach Vol, veh/h		0			0			138			68	
Approach Delay, s/veh		0.0			0.0			65.0			2.3	
Approach LOS								E			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	13.9		0.0	3.9	10.0		0.0
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.0	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	10.0	2.1		0.0	2.1	2.2		0.0
Green Ext Time (p_c), s	0.0	0.9		0.0	0.0	0.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.3
HCM 2010 LOS	D

Notes

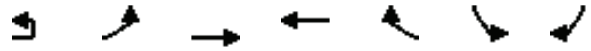
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	6	53	2	62	6	72	107	63	36	6
Future Vol, veh/h	2	0	6	53	2	62	6	72	107	63	36	6
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	2	0	6	54	2	63	6	73	109	64	37	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	220	362	22	287	311	93	43	0	0	182	0	0
Stage 1	168	168	-	140	140	-	-	-	-	-	-	-
Stage 2	52	194	-	147	171	-	-	-	-	-	-	-
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	714	562	1047	640	600	943	1557	-	-	1383	-	-
Stage 1	814	756	-	846	777	-	-	-	-	-	-	-
Stage 2	951	737	-	838	754	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	638	534	1047	612	570	941	1557	-	-	1383	-	-
Mov Cap-2 Maneuver	638	534	-	612	570	-	-	-	-	-	-	-
Stage 1	811	721	-	843	774	-	-	-	-	-	-	-
Stage 2	880	734	-	795	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	10.7	0.2	4.6
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1557	-	-	902	750	1383	-	-
HCM Lane V/C Ratio	0.004	-	-	0.009	0.159	0.046	-	-
HCM Control Delay (s)	7.3	-	-	9	10.7	7.7	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.6	0.1	-	-



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	25	81	93	75	104	66	29
Future Volume (vph)	25	81	93	75	104	66	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	0.95	0.95		0.97	0.91
Frt		1.00	1.00	0.91		0.99	0.85
Flt Protected		0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)		1752	3505	3200		3393	1427
Flt Permitted		0.22	1.00	1.00		0.95	1.00
Satd. Flow (perm)		415	3505	3200		3393	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	26	83	95	77	106	67	30
RTOR Reduction (vph)	0	0	0	79	0	3	25
Lane Group Flow (vph)	0	109	95	104	0	67	2
Turn Type	custom	Prot	NA	NA		Perm	Perm
Protected Phases		1	6	2			
Permitted Phases	1					4	4
Actuated Green, G (s)		18.3	33.4	11.6		3.9	3.9
Effective Green, g (s)		17.8	33.4	11.6		3.9	3.9
Actuated g/C Ratio		0.39	0.74	0.26		0.09	0.09
Clearance Time (s)		3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)		163	2584	819		292	122
v/s Ratio Prot			0.03	c0.03			
v/s Ratio Perm		c0.26				c0.02	0.00
v/c Ratio		0.67	0.04	0.13		0.23	0.02
Uniform Delay, d1		11.3	1.6	13.0		19.3	18.9
Progression Factor		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		9.9	0.0	0.1		0.4	0.1
Delay (s)		21.3	1.6	13.1		19.7	19.0
Level of Service		C	A	B		B	B
Approach Delay (s)			12.1	13.1		19.5	
Approach LOS			B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	45.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

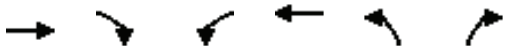
Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	233	23	0	166	22	71
Future Vol, veh/h	233	23	0	166	22	71
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	25	0	182	24	78

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	365	143
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	95	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	608	879
Stage 1	-	-	0	-	751	-
Stage 2	-	-	0	-	918	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	605	877
Mov Cap-2 Maneuver	-	-	-	-	605	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	915	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	793	-	-	-
HCM Lane V/C Ratio	0.129	-	-	-
HCM Control Delay (s)	10.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	156	12	10	166	67	16
Future Volume (veh/h)	156	12	10	166	67	16
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	170	13	11	180	73	17
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	712	54	26	1591	137	32
Arrive On Green	0.22	0.22	0.01	0.45	0.10	0.10
Sat Flow, veh/h	3395	250	1757	3597	1379	321
Grp Volume(v), veh/h	90	93	11	180	91	0
Grp Sat Flow(s),veh/h/ln	1752	1800	1757	1752	1719	0
Q Serve(g_s), s	0.9	0.9	0.1	0.6	1.0	0.0
Cycle Q Clear(g_c), s	0.9	0.9	0.1	0.6	1.0	0.0
Prop In Lane		0.14	1.00		0.80	0.19
Lane Grp Cap(c), veh/h	378	388	26	1591	170	0
V/C Ratio(X)	0.24	0.24	0.42	0.11	0.53	0.00
Avail Cap(c_a), veh/h	1610	1654	480	4961	640	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.5	6.5	9.8	3.2	8.6	0.0
Incr Delay (d2), s/veh	0.3	0.3	10.5	0.0	2.6	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	0.4	0.4	0.1	0.3	0.6	0.0
LnGrp Delay(d),s/veh	6.8	6.8	20.3	3.2	11.2	0.0
LnGrp LOS	A	A	C	A	B	
Approach Vol, veh/h	183			191	91	
Approach Delay, s/veh	6.8			4.2	11.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.5	4.8	8.8				13.6
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		3.0	2.1	2.9				2.6
Green Ext Time (p_c), s		0.1	0.0	1.7				2.0

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	161	11	0	176	0	17
Future Vol, veh/h	161	11	0	176	0	17
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	175	12	0	191	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	277	93
Stage 1	-	-	-	-	181	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	687	943
Stage 1	-	-	0	-	829	-
Stage 2	-	-	0	-	914	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	687	943
Mov Cap-2 Maneuver	-	-	-	-	687	-
Stage 1	-	-	-	-	829	-
Stage 2	-	-	-	-	914	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	943	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-
HCM Control Delay (s)	8.9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

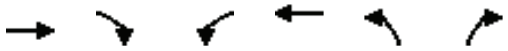
Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	148	0	2	358	23	8	0	0	18	0	34
Future Vol, veh/h	23	148	0	2	358	23	8	0	0	18	0	34
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	172	0	2	416	27	9	0	0	21	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	443	0	-	172	0	0	438	673	86	574	-	222
Stage 1	-	-	-	-	-	-	226	226	-	434	-	-
Stage 2	-	-	-	-	-	-	212	447	-	140	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1113	-	0	1402	-	-	502	375	956	402	0	782
Stage 1	-	-	0	-	-	-	756	716	-	570	0	-
Stage 2	-	-	0	-	-	-	770	572	-	849	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1113	-	-	1402	-	-	467	365	956	394	-	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	365	-	394	-	-
Stage 1	-	-	-	-	-	-	738	699	-	556	-	-
Stage 2	-	-	-	-	-	-	730	571	-	828	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	12.9	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	467	1113	-	1402	-	-	394	782
HCM Lane V/C Ratio	0.019	0.024	-	0.002	-	-	0.053	0.051
HCM Control Delay (s)	12.9	8.3	-	7.6	-	-	14.6	9.8
HCM Lane LOS	B	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.1	-	0	-	-	0.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	123	39	72	245	53	54
Future Volume (veh/h)	123	39	72	245	53	54
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	135	43	79	269	58	59
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	742	228	115	1807	281	250
Arrive On Green	0.28	0.28	0.06	0.51	0.16	0.16
Sat Flow, veh/h	2770	823	1781	3647	1781	1585
Grp Volume(v), veh/h	88	90	79	269	58	59
Grp Sat Flow(s),veh/h/ln	1777	1722	1781	1777	1781	1585
Q Serve(g_s), s	0.9	1.0	1.0	1.0	0.7	0.8
Cycle Q Clear(g_c), s	0.9	1.0	1.0	1.0	0.7	0.8
Prop In Lane		0.48	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	492	477	115	1807	281	250
V/C Ratio(X)	0.18	0.19	0.69	0.15	0.21	0.24
Avail Cap(c_a), veh/h	2149	2083	1449	4298	3343	2975
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.6	6.6	11.0	3.1	8.8	8.8
Incr Delay (d2), s/veh	0.6	0.7	7.1	0.1	0.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.5	0.1	0.2	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.2	7.3	18.1	3.3	9.7	10.1
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	178			348	117	
Approach Delay, s/veh	7.2			6.6	9.9	
Approach LOS	A			A	A	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.5	10.6				16.2	7.8
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	3.0	3.0				3.0	2.8
Green Ext Time (p_c), s	0.1	2.2				4.0	1.0

Intersection Summary			
HCM 6th Ctrl Delay		7.4	
HCM 6th LOS		A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	63	73	43	140	21	122	83	23	11	103	55
Future Volume (veh/h)	41	63	73	43	140	21	122	83	23	11	103	55
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	45	69	0	47	154	0	134	91	0	12	113	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	101	741		105	749		221	1121		16	711	
Arrive On Green	0.06	0.21	0.00	0.06	0.21	0.00	0.12	0.32	0.00	0.01	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	45	69	0	47	154	0	134	91	0	12	113	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.0	0.6	0.0	1.0	1.4	0.0	2.8	0.7	0.0	0.3	1.0	0.0
Cycle Q Clear(g_c), s	1.0	0.6	0.0	1.0	1.4	0.0	2.8	0.7	0.0	0.3	1.0	0.0
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	101	741		105	749		221	1121		16	711	
V/C Ratio(X)	0.45	0.09		0.45	0.21		0.61	0.08		0.74	0.16	
Avail Cap(c_a), veh/h	1205	3491		1659	3491		1659	3491		1205	3491	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.9	12.5	0.0	17.8	12.8	0.0	16.2	9.4	0.0	19.4	12.9	0.0
Incr Delay (d2), s/veh	3.1	0.1	0.0	3.0	0.4	0.0	2.7	0.1	0.0	48.1	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	0.2	0.0	0.4	0.5	0.0	1.1	0.2	0.0	0.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	12.7	0.0	20.8	13.1	0.0	18.9	9.5	0.0	67.5	13.2	0.0
LnGrp LOS	C	B		C	B		B	A		E	B	
Approach Vol, veh/h		114	A		201	A		225	A		125	A
Approach Delay, s/veh		16.0			14.9			15.1			18.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.4	16.4	6.3	12.2	8.9	11.8	6.2	12.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.3	2.7	3.0	2.6	4.8	3.0	3.0	3.4
Green Ext Time (p_c), s	0.0	1.1	0.1	0.8	0.4	1.4	0.1	2.0

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	450	740	147	494	1	823	6	254	0	0	0
Future Volume (veh/h)	12	450	740	147	494	1	823	6	254	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	12	455	0	148	499	1	835	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	11	1112	470	193	2183	4	1271	0	567	0	3	0
Arrive On Green	0.01	0.32	0.00	0.11	0.42	0.40	0.36	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5190	10	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	12	455	0	148	323	177	835	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1843	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.4	5.8	0.0	4.7	3.5	3.5	11.3	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	5.8	0.0	4.7	3.5	3.5	11.3	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	11	1112	470	193	1413	775	1271	0	567	0	3	0
V/C Ratio(X)	1.07	0.41	0.00	0.77	0.23	0.23	0.66	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	294	2220	965	464	2126	1167	1854	0	828	0	308	0
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	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	28.2	15.2	0.0	24.6	10.6	10.6	15.2	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	145.7	0.5	0.0	6.2	0.2	0.3	1.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	2.2	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	2.9	0.0	2.6	1.6	1.8	5.7	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	176.1	15.7	0.0	30.8	10.7	10.9	16.4	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	B		C	B	B	B					
Approach Vol, veh/h		467			648			835			0	
Approach Delay, s/veh		19.9			15.4			16.4			0.0	
Approach LOS		B			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	22.0		24.6	4.4	27.9		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	6.7	7.8		13.3	2.4	5.5		0.0
Green Ext Time (p_c), s	0.3	9.2		7.3	0.0	9.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	82	792	37	155	583	29	28	8	127	127	8	102
Future Volume (veh/h)	82	792	37	155	583	29	28	8	127	127	8	102
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	83	800	34	157	589	13	28	8	15	128	8	21
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	100	1597	68	191	1815	811	39	21	39	153	45	119
Arrive On Green	0.06	0.47	0.47	0.11	0.52	0.52	0.02	0.04	0.04	0.09	0.10	0.10
Sat Flow, veh/h	1757	3425	146	1757	3505	1566	1757	574	1077	1757	450	1182
Grp Volume(v), veh/h	83	409	425	157	589	13	28	0	23	128	0	29
Grp Sat Flow(s),veh/h/ln	1757	1752	1819	1757	1752	1566	1757	0	1651	1757	0	1632
Q Serve(g_s), s	2.5	8.6	8.6	4.6	5.2	0.2	0.8	0.0	0.7	3.8	0.0	0.9
Cycle Q Clear(g_c), s	2.5	8.6	8.6	4.6	5.2	0.2	0.8	0.0	0.7	3.8	0.0	0.9
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.65	1.00		0.72
Lane Grp Cap(c), veh/h	100	817	848	191	1815	811	39	0	59	153	0	164
V/C Ratio(X)	0.83	0.50	0.50	0.82	0.32	0.02	0.71	0.00	0.39	0.84	0.00	0.18
Avail Cap(c_a), veh/h	647	992	1030	647	1985	887	647	0	779	580	0	678
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.7	9.8	9.8	23.1	7.4	6.2	25.7	0.0	25.0	23.8	0.0	21.8
Incr Delay (d2), s/veh	15.5	1.0	1.0	8.5	0.2	0.0	20.9	0.0	5.8	11.2	0.0	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	1.6	4.3	4.5	2.7	2.5	0.1	0.6	0.0	0.4	2.3	0.0	0.4
LnGrp Delay(d),s/veh	40.2	10.9	10.8	31.6	7.6	6.2	46.6	0.0	30.8	35.0	0.0	22.3
LnGrp LOS	D	B	B	C	A	A	D		C	D		C
Approach Vol, veh/h		917			759			51			157	
Approach Delay, s/veh		13.5			12.6			39.5			32.7	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	28.7	8.6	5.9	7.0	31.4	5.2	9.3
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	6.6	10.6	5.8	2.7	4.5	7.2	2.8	2.9
Green Ext Time (p_c), s	0.3	14.1	0.2	0.2	0.1	16.0	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	699	88	164	391	144	82	55	105	107	54	59
Future Volume (veh/h)	68	699	88	164	391	144	82	55	105	107	54	59
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	971	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	69	706	80	166	395	125	83	56	-67	108	55	11
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	49	1269	144	206	1222	382	105	127	108	124	147	124
Arrive On Green	0.05	0.40	0.39	0.12	0.46	0.45	0.06	0.07	0.00	0.07	0.08	0.08
Sat Flow, veh/h	925	3174	359	1757	2629	823	1757	1845	1568	1757	1845	1561
Grp Volume(v), veh/h	69	390	396	166	262	258	83	56	-67	108	55	11
Grp Sat Flow(s),veh/h/ln	925	1752	1781	1757	1752	1699	1757	1845	1568	1757	1845	1561
Q Serve(g_s), s	2.5	8.0	8.0	4.3	4.4	4.5	2.2	1.4	0.0	2.8	1.3	0.3
Cycle Q Clear(g_c), s	2.5	8.0	8.0	4.3	4.4	4.5	2.2	1.4	0.0	2.8	1.3	0.3
Prop In Lane	1.00		0.20	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	49	700	712	206	814	790	105	127	108	124	147	124
V/C Ratio(X)	1.42	0.56	0.56	0.80	0.32	0.33	0.79	0.44	-0.62	0.87	0.37	0.09
Avail Cap(c_a), veh/h	357	1729	1757	1733	2856	2770	527	1029	874	716	1345	1138
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	10.8	10.8	20.1	7.9	8.0	21.6	20.8	0.0	21.5	20.4	19.9
Incr Delay (d2), s/veh	212.0	1.0	1.0	7.2	0.3	0.3	12.2	2.4	0.0	16.3	1.6	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	3.5	4.0	4.1	2.5	2.2	2.2	1.4	0.8	0.0	1.9	0.7	0.1
LnGrp Delay(d),s/veh	234.1	11.8	11.8	27.2	8.2	8.3	33.8	23.2	0.0	37.7	21.9	20.2
LnGrp LOS	F	B	B	C	A	A	C	C		D	C	C
Approach Vol, veh/h		855			686			72			174	
Approach Delay, s/veh		29.7			12.8			57.1			31.6	
Approach LOS		C			B			E			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	22.6	7.3	7.2	6.5	25.7	6.8	7.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	6.3	10.0	4.8	3.4	4.5	6.5	4.2	3.3
Green Ext Time (p_c), s	0.5	8.1	0.2	0.2	0.1	5.2	0.1	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	3	83	3	34	27	23	105	5	6	99	104
Future Volume (veh/h)	117	3	83	3	34	27	23	105	5	6	99	104
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	118	3	64	3	34	-56	23	106	5	6	100	25
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	421	7	84	0	59	387	12	1022	48	8	778	188
Arrive On Green	0.17	0.17	0.19	0.17	0.17	0.00	0.01	0.30	0.30	0.00	0.28	0.28
Sat Flow, veh/h	911	42	504	-118	-2545	4030	1757	3409	160	1757	2797	677
Grp Volume(v), veh/h	185	0	0	0	0	0	23	54	57	6	61	64
Grp Sat Flow(s),veh/h/ln	1457	0	0	0	0	0	1757	1752	1816	1757	1752	1722
Q Serve(g_s), s	2.6	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.1	0.6	0.6
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.1	0.6	0.6
Prop In Lane	0.64		0.35	-0.16		2.95	1.00		0.09	1.00		0.39
Lane Grp Cap(c), veh/h	512	0	0	0	0	0	12	525	545	8	488	479
V/C Ratio(X)	0.36	0.00	0.00	0.00	0.00	0.00	1.88	0.10	0.10	0.75	0.13	0.13
Avail Cap(c_a), veh/h	1432	0	0	0	0	0	1405	2403	2490	1405	2403	2362
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	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.6	0.0	0.0	0.0	0.0	0.0	10.9	5.5	5.5	10.9	5.9	5.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.0	0.0	0.0	456.1	0.1	0.1	82.8	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.0	0.0	0.0	1.6	0.2	0.3	0.2	0.3	0.3
LnGrp Delay(d),s/veh	9.0	0.0	0.0	0.0	0.0	0.0	467.1	5.7	5.7	93.7	6.1	6.1
LnGrp LOS	A						F	A	A	F	A	A
Approach Vol, veh/h		185			0			134			131	
Approach Delay, s/veh		9.0			0.0			84.9			10.1	
Approach LOS		A						F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.7	10.6		7.6	4.2	10.1		7.6
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.1	2.5		0.0	2.2	2.6		4.6
Green Ext Time (p_c), s	0.0	1.9		0.0	0.0	1.9		0.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.9
HCM 2010 LOS	C

Notes

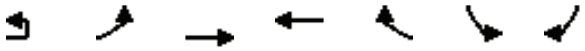
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	1	51	20	14	12	37	99	17	5	134	46
Future Vol, veh/h	22	1	51	20	14	12	37	99	17	5	134	46
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	1	52	20	14	12	37	100	17	5	135	46

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	304	365	96	264	379	60	185	0	0	118	0	0
Stage 1	172	172	-	184	184	-	-	-	-	-	-	-
Stage 2	132	193	-	80	195	-	-	-	-	-	-	-
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	623	560	938	665	549	990	1380	-	-	1461	-	-
Stage 1	810	753	-	797	744	-	-	-	-	-	-	-
Stage 2	855	737	-	917	736	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	587	541	934	611	530	989	1377	-	-	1461	-	-
Mov Cap-2 Maneuver	587	541	-	611	530	-	-	-	-	-	-	-
Stage 1	786	748	-	775	723	-	-	-	-	-	-	-
Stage 2	806	717	-	861	731	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	11	1.9	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1377	-	-	788	645	1461	-	-
HCM Lane V/C Ratio	0.027	-	-	0.095	0.072	0.003	-	-
HCM Control Delay (s)	7.7	-	-	10	11	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.2	0	-	-



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	25	149	171	150	4	68	137
Future Volume (vph)	25	149	171	150	4	68	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	1.00		0.93	0.85
Flt Protected		0.95	1.00	1.00		0.98	1.00
Satd. Flow (prot)		1752	3505	3490		3230	1427
Flt Permitted		0.22	1.00	1.00		0.98	1.00
Satd. Flow (perm)		415	3505	3490		3230	1427
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	25	151	173	152	4	69	138
RTOR Reduction (vph)	0	0	0	2	0	61	61
Lane Group Flow (vph)	0	176	173	154	0	77	8
Confl. Peds. (#/hr)					2		
Turn Type	custom	Prot	NA	NA		Perm	Perm
Protected Phases		1	6	2			
Permitted Phases	1					4	4
Actuated Green, G (s)		18.3	31.2	9.4		5.1	5.1
Effective Green, g (s)		17.8	31.2	9.4		5.1	5.1
Actuated g/C Ratio		0.40	0.70	0.21		0.12	0.12
Clearance Time (s)		3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)		166	2468	740		371	164
v/s Ratio Prot			0.05	c0.04			
v/s Ratio Perm		c0.42				c0.02	0.01
v/c Ratio		1.06	0.07	0.21		0.21	0.05
Uniform Delay, d1		13.2	2.0	14.4		17.8	17.4
Progression Factor		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		86.7	0.0	0.3		0.3	0.1
Delay (s)		100.0	2.1	14.7		18.0	17.6
Level of Service		F	A	B		B	B
Approach Delay (s)			51.5	14.7		17.9	
Approach LOS			D	B		B	

Intersection Summary			
HCM 2000 Control Delay	33.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	44.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	388	44	0	441	34	114
Future Vol, veh/h	388	44	0	441	34	114
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	426	48	0	485	37	125

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	698	239
Stage 1	-	-	-	-	452	-
Stage 2	-	-	-	-	246	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	375	762
Stage 1	-	-	0	-	608	-
Stage 2	-	-	0	-	772	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	373	760
Mov Cap-2 Maneuver	-	-	-	-	373	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	769	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	614	-	-	-
HCM Lane V/C Ratio	0.265	-	-	-
HCM Control Delay (s)	13	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	354	33	28	320	37	9
Future Volume (veh/h)	354	33	28	320	37	9
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	385	36	30	348	40	10
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1086	101	66	1969	81	20
Arrive On Green	0.33	0.33	0.04	0.56	0.06	0.06
Sat Flow, veh/h	3334	302	1757	3597	1347	337
Grp Volume(v), veh/h	207	214	30	348	51	0
Grp Sat Flow(s),veh/h/ln	1752	1791	1757	1752	1718	0
Q Serve(g_s), s	2.1	2.1	0.4	1.1	0.7	0.0
Cycle Q Clear(g_c), s	2.1	2.1	0.4	1.1	0.7	0.0
Prop In Lane		0.17	1.00		0.78	0.20
Lane Grp Cap(c), veh/h	587	600	66	1969	103	0
V/C Ratio(X)	0.35	0.36	0.45	0.18	0.49	0.00
Avail Cap(c_a), veh/h	1362	1392	406	4196	541	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.0	6.0	11.2	2.5	10.8	0.0
Incr Delay (d2), s/veh	0.4	0.4	4.7	0.0	3.6	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	1.0	1.1	0.3	0.5	0.4	0.0
LnGrp Delay(d),s/veh	6.3	6.3	15.9	2.6	14.5	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	421			378	51	
Approach Delay, s/veh	6.3			3.6	14.5	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		5.9	5.4	12.5				17.9
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		2.7	2.4	4.1				3.1
Green Ext Time (p_c), s		0.0	0.0	3.9				4.7

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	330	33	0	348	0	9
Future Vol, veh/h	330	33	0	348	0	9
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	359	36	0	378	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	566	197
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	189	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	452	808
Stage 1	-	-	0	-	660	-
Stage 2	-	-	0	-	821	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	452	808
Mov Cap-2 Maneuver	-	-	-	-	452	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	821	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	808	-	-	-
HCM Lane V/C Ratio	0.012	-	-	-
HCM Control Delay (s)	9.5	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

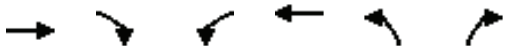
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	312	0	1	485	37	4	1	2	32	0	30
Future Vol, veh/h	68	312	0	1	485	37	4	1	2	32	0	30
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	363	0	1	564	43	4	1	2	37	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	607	0	-	363	0	0	805	1130	182	928	-	304
Stage 1	-	-	-	-	-	-	521	521	-	588	-	-
Stage 2	-	-	-	-	-	-	284	609	-	340	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	967	-	0	1192	-	-	274	202	829	223	0	692
Stage 1	-	-	0	-	-	-	507	530	-	462	0	-
Stage 2	-	-	0	-	-	-	699	484	-	648	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	967	-	-	1192	-	-	244	185	829	207	-	692
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	185	-	207	-	-
Stage 1	-	-	-	-	-	-	465	487	-	424	-	-
Stage 2	-	-	-	-	-	-	663	484	-	592	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	17.8	18.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	289	967	-	1192	-	-	207	692
HCM Lane V/C Ratio	0.026	0.082	-	0.001	-	-	0.18	0.05
HCM Control Delay (s)	17.8	9.1	-	8	-	-	26.2	10.5
HCM Lane LOS	C	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.3	-	0	-	-	0.6	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	210	107	140	351	142	103
Future Volume (veh/h)	210	107	140	351	142	103
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	216	110	144	362	146	106
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	674	329	178	1874	366	325
Arrive On Green	0.29	0.29	0.10	0.53	0.21	0.21
Sat Flow, veh/h	2389	1119	1781	3647	1781	1585
Grp Volume(v), veh/h	165	161	144	362	146	106
Grp Sat Flow(s),veh/h/ln	1777	1638	1781	1777	1781	1585
Q Serve(g_s), s	2.2	2.3	2.4	1.6	2.1	1.7
Cycle Q Clear(g_c), s	2.2	2.3	2.4	1.6	2.1	1.7
Prop In Lane		0.68	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	522	481	178	1874	366	325
V/C Ratio(X)	0.32	0.33	0.81	0.19	0.40	0.33
Avail Cap(c_a), veh/h	1723	1588	1161	3445	2680	2385
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.2	8.3	13.2	3.7	10.3	10.1
Incr Delay (d2), s/veh	1.2	1.4	8.4	0.2	1.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.7	1.1	0.2	0.8	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.4	9.7	21.6	3.9	12.1	11.6
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	326			506	252	
Approach Delay, s/veh	9.5			8.9	11.9	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.0	12.8				19.8	10.1
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	4.4	4.3				3.6	4.1
Green Ext Time (p_c), s	0.3	4.4				5.5	2.3

Intersection Summary			
HCM 6th Ctrl Delay		9.8	
HCM 6th LOS		A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	109	130	51	133	33	230	148	43	39	173	136
Future Volume (veh/h)	83	109	130	51	133	33	230	148	43	39	173	136
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	87	115	0	54	140	0	242	156	0	41	182	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	762		116	666		303	1097		91	674	
Arrive On Green	0.09	0.21	0.00	0.07	0.19	0.00	0.17	0.31	0.00	0.05	0.19	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	87	115	0	54	140	0	242	156	0	41	182	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.1	1.2	0.0	1.3	1.5	0.0	5.8	1.4	0.0	1.0	1.9	0.0
Cycle Q Clear(g_c), s	2.1	1.2	0.0	1.3	1.5	0.0	5.8	1.4	0.0	1.0	1.9	0.0
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	165	762		116	666		303	1097		91	674	
V/C Ratio(X)	0.53	0.15		0.46	0.21		0.80	0.14		0.45	0.27	
Avail Cap(c_a), veh/h	1063	3080		1464	3080		1464	3080		1063	3080	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	14.2	0.0	20.0	15.3	0.0	17.7	11.1	0.0	20.5	15.4	0.0
Incr Delay (d2), s/veh	2.6	0.2	0.0	2.9	0.4	0.0	4.8	0.2	0.0	3.4	0.6	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	0.9	0.4	0.0	0.6	0.5	0.0	2.4	0.5	0.0	0.4	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.8	14.4	0.0	22.9	15.7	0.0	22.5	11.3	0.0	23.9	15.9	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		202	A		194	A		398	A		223	A
Approach Delay, s/veh		17.6			17.7			18.1			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	17.7	6.9	13.5	11.6	12.4	8.1	12.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	3.4	3.3	3.2	7.8	3.9	4.1	3.5
Green Ext Time (p_c), s	0.1	2.0	0.1	1.4	0.7	2.4	0.2	1.8

Intersection Summary	
HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	713	752	172	696	1	924	0	310	3	0	1
Future Volume (veh/h)	12	713	752	172	696	1	924	0	310	3	0	1
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	12	728	0	176	710	1	943	0	0	3	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	15	1214	543	216	2394	3	1169	0	522	2	0	0
Arrive On Green	0.01	0.35	0.00	0.12	0.46	0.45	0.33	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5193	7	3514	0	1568	1757	0	0
Grp Volume(v), veh/h	12	728	0	176	459	252	943	0	0	3	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1843	1757	0	1568	1757	0	0
Q Serve(g_s), s	0.5	13.7	0.0	7.8	6.8	6.8	19.6	0.0	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.5	13.7	0.0	7.8	6.8	6.8	19.6	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	15	1214	543	216	1548	850	1169	0	522	2	0	0
V/C Ratio(X)	0.82	0.60	0.00	0.81	0.30	0.30	0.81	0.00	0.00	1.37	0.00	0.00
Avail Cap(c_a), veh/h	209	1578	706	330	1548	850	1318	0	588	209	0	0
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.6	21.6	0.0	34.2	13.5	13.5	24.3	0.0	0.0	40.0	0.0	0.0
Incr Delay (d2), s/veh	65.3	1.0	0.0	8.9	0.2	0.4	4.2	0.0	0.0	422.2	0.0	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	47.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	6.7	0.0	4.3	3.2	3.5	10.1	0.0	0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh	104.9	22.6	0.0	43.0	13.7	13.9	28.6	0.0	0.0	509.2	0.0	0.0
LnGrp LOS	F	C		D	B	B	C			F		
Approach Vol, veh/h		740			887			943			3	
Approach Delay, s/veh		23.9			19.6			28.6			509.1	
Approach LOS		C			B			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	31.7		30.6	4.7	40.9		3.8
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	9.8	15.7		21.6	2.5	8.8		2.1
Green Ext Time (p_c), s	0.2	11.0		5.0	0.0	14.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	933	27	175	657	36	22	6	142	122	7	59
Future Volume (veh/h)	83	933	27	175	657	36	22	6	142	122	7	59
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	85	952	26	179	670	17	22	6	17	124	7	12
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	98	1621	44	217	1867	835	30	20	57	149	70	120
Arrive On Green	0.06	0.46	0.46	0.12	0.53	0.53	0.02	0.05	0.05	0.08	0.12	0.12
Sat Flow, veh/h	1757	3485	95	1757	3505	1568	1757	421	1193	1757	607	1041
Grp Volume(v), veh/h	85	479	499	179	670	17	22	0	23	124	0	19
Grp Sat Flow(s),veh/h/ln	1757	1752	1828	1757	1752	1568	1757	0	1614	1757	0	1648
Q Serve(g_s), s	2.8	11.5	11.5	5.7	6.3	0.3	0.7	0.0	0.8	4.0	0.0	0.6
Cycle Q Clear(g_c), s	2.8	11.5	11.5	5.7	6.3	0.3	0.7	0.0	0.8	4.0	0.0	0.6
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.74	1.00		0.63
Lane Grp Cap(c), veh/h	98	815	850	217	1867	835	30	0	78	149	0	191
V/C Ratio(X)	0.87	0.59	0.59	0.82	0.36	0.02	0.73	0.00	0.30	0.83	0.00	0.10
Avail Cap(c_a), veh/h	596	915	955	596	1867	835	596	0	702	535	0	631
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.9	11.3	11.3	24.6	7.7	6.3	28.1	0.0	26.4	25.9	0.0	22.7
Incr Delay (d2), s/veh	19.3	1.5	1.5	7.6	0.2	0.0	28.8	0.0	3.0	11.5	0.0	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	1.8	5.8	6.0	3.2	3.1	0.1	0.6	0.0	0.4	2.4	0.0	0.3
LnGrp Delay(d),s/veh	46.2	12.8	12.8	32.2	8.0	6.4	56.9	0.0	29.4	37.4	0.0	22.9
LnGrp LOS	D	B	B	C	A	A	E		C	D		C
Approach Vol, veh/h		1063			866			45			143	
Approach Delay, s/veh		15.5			13.0			42.8			35.5	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	30.7	8.9	6.8	7.2	34.6	5.0	10.6
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.6	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	7.7	13.5	6.0	2.8	4.8	8.3	2.7	2.6
Green Ext Time (p_c), s	0.4	13.2	0.2	0.2	0.1	17.1	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	831	105	181	433	121	99	52	107	105	39	36
Future Volume (veh/h)	53	831	105	181	433	121	99	52	107	105	39	36
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	54	848	99	185	442	110	101	53	-31	107	40	6
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	71	1556	182	227	1618	399	118	93	79	127	103	87
Arrive On Green	0.04	0.49	0.48	0.13	0.58	0.57	0.07	0.05	0.00	0.07	0.06	0.06
Sat Flow, veh/h	1757	3162	369	1757	2787	688	1757	1845	1568	1757	1845	1563
Grp Volume(v), veh/h	54	470	477	185	277	275	101	53	-31	107	40	6
Grp Sat Flow(s),veh/h/ln	1757	1752	1779	1757	1752	1722	1757	1845	1568	1757	1845	1563
Q Serve(g_s), s	1.9	11.6	11.7	6.4	4.9	5.0	3.6	1.8	0.0	3.8	1.3	0.2
Cycle Q Clear(g_c), s	1.9	11.6	11.7	6.4	4.9	5.0	3.6	1.8	0.0	3.8	1.3	0.2
Prop In Lane	1.00		0.21	1.00		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	71	862	875	227	1017	1000	118	93	79	127	103	87
V/C Ratio(X)	0.76	0.55	0.55	0.81	0.27	0.28	0.85	0.57	-0.39	0.84	0.39	0.07
Avail Cap(c_a), veh/h	506	1289	1308	1292	2130	2093	393	767	652	534	1003	850
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	11.0	11.1	26.5	6.5	6.6	28.9	29.0	0.0	28.7	28.5	28.0
Incr Delay (d2), s/veh	14.8	0.8	0.8	7.0	0.2	0.2	15.6	5.3	0.0	13.6	2.4	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	1.2	5.8	5.9	3.5	2.4	2.4	2.2	1.0	0.0	2.3	0.7	0.1
LnGrp Delay(d),s/veh	44.5	11.8	11.8	33.5	6.7	6.8	44.4	34.4	0.0	42.2	30.9	28.3
LnGrp LOS	D	B	B	C	A	A	D	C		D	C	C
Approach Vol, veh/h		1001			737			123			153	
Approach Delay, s/veh		13.6			13.5			51.3			38.7	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	34.8	8.5	7.2	6.5	40.3	8.2	7.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	16.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	7.4	13.7	5.8	3.8	3.9	7.0	5.6	3.3
Green Ext Time (p_c), s	0.5	16.6	0.2	0.4	0.1	22.2	0.1	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	17.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	4	93	9	39	6	34	128	2	2	106	117
Future Volume (veh/h)	140	4	93	9	39	6	34	128	2	2	106	117
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	143	4	75	9	40	-56	35	131	2	2	108	32
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	430	14	95	0	842	674	38	1074	16	8	708	202
Arrive On Green	0.19	0.19	0.21	0.19	0.19	0.00	0.02	0.30	0.30	0.00	0.26	0.26
Sat Flow, veh/h	894	74	494	-913	-6807	8823	1757	3534	54	1757	2691	769
Grp Volume(v), veh/h	222	0	0	0	0	0	35	65	68	2	69	71
Grp Sat Flow(s),veh/h/ln	1462	0	0	0	0	0	1757	1752	1835	1757	1752	1707
Q Serve(g_s), s	3.1	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.6	0.0	0.7	0.7
Cycle Q Clear(g_c), s	3.3	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.6	0.0	0.7	0.7
Prop In Lane	0.64		0.34	-1.29		8.00	1.00		0.03	1.00		0.45
Lane Grp Cap(c), veh/h	540	0	0	0	0	0	38	533	558	8	461	449
V/C Ratio(X)	0.41	0.00	0.00	0.00	0.00	0.00	0.91	0.12	0.12	0.26	0.15	0.16
Avail Cap(c_a), veh/h	1364	0	0	0	0	0	1338	2288	2396	1338	2288	2229
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	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.7	0.0	0.0	0.0	0.0	0.0	11.2	5.8	5.8	11.5	6.5	6.5
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	48.0	0.1	0.1	17.1	0.2	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	1.4	0.0	0.0	0.0	0.0	0.0	0.7	0.3	0.3	0.0	0.4	0.4
LnGrp Delay(d),s/veh	9.2	0.0	0.0	0.0	0.0	0.0	59.3	5.9	5.9	28.6	6.7	6.7
LnGrp LOS	A						E	A	A	C	A	A
Approach Vol, veh/h		222			0			168			142	
Approach Delay, s/veh		9.2			0.0			17.0			7.0	
Approach LOS		A						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.6	11.0		8.4	4.5	10.0		8.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.6	2.6		0.0	2.5	2.7		5.3
Green Ext Time (p_c), s	0.0	2.2		0.0	0.0	2.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Notes

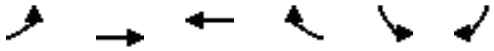
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	0	64	24	18	4	33	139	3	3	173	32
Future Vol, veh/h	21	0	64	24	18	4	33	139	3	3	173	32
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	21	0	65	24	18	4	34	142	3	3	177	33

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	348	411	105	305	426	74	209	0	0	145	0	0
Stage 1	199	199	-	211	211	-	-	-	-	-	-	-
Stage 2	149	212	-	94	215	-	-	-	-	-	-	-
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	580	527	926	622	517	969	1352	-	-	1428	-	-
Stage 1	781	733	-	769	724	-	-	-	-	-	-	-
Stage 2	836	723	-	899	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	549	513	926	566	503	967	1352	-	-	1425	-	-
Mov Cap-2 Maneuver	549	513	-	566	503	-	-	-	-	-	-	-
Stage 1	761	731	-	750	706	-	-	-	-	-	-	-
Stage 2	789	705	-	834	719	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	12	1.5	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1352	-	-	792	559	1425	-	-
HCM Lane V/C Ratio	0.025	-	-	0.11	0.084	0.002	-	-
HCM Control Delay (s)	7.7	-	-	10.1	12	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.3	0	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	243	152	162	157	104
Future Volume (vph)	13	243	152	162	157	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.92		0.98	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3234		3364	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3234		3364	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	13	248	155	165	160	106
RTOR Reduction (vph)	0	0	101	0	10	64
Lane Group Flow (vph)	13	248	219	0	173	19
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	1.0	17.1	12.6		7.3	7.3
Effective Green, g (s)	0.5	17.1	12.6		7.3	7.3
Actuated g/C Ratio	0.02	0.53	0.39		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	27	1849	1257		757	321
v/s Ratio Prot	0.01	c0.07	c0.07			
v/s Ratio Perm					c0.05	0.01
v/c Ratio	0.48	0.13	0.17		0.23	0.06
Uniform Delay, d1	15.8	3.9	6.5		10.2	9.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	12.9	0.1	0.1		0.2	0.1
Delay (s)	28.7	4.0	6.6		10.4	9.9
Level of Service	C	A	A		B	A
Approach Delay (s)		5.2	6.6		10.3	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	32.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	23.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

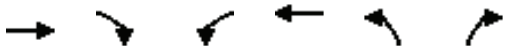
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	315	55	0	500	28	141
Future Vol, veh/h	315	55	0	500	28	141
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	346	60	0	549	31	155

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	656	205
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	279	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	398	802
Stage 1	-	-	0	-	663	-
Stage 2	-	-	0	-	743	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	396	800
Mov Cap-2 Maneuver	-	-	-	-	396	-
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	740	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	684	-	-	-
HCM Lane V/C Ratio	0.272	-	-	-
HCM Control Delay (s)	12.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	293	38	33	329	43	11
Future Volume (veh/h)	293	38	33	329	43	11
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	318	41	36	358	47	12
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	984	126	78	1927	93	24
Arrive On Green	0.31	0.31	0.04	0.55	0.07	0.07
Sat Flow, veh/h	3219	400	1757	3597	1345	343
Grp Volume(v), veh/h	177	182	36	358	60	0
Grp Sat Flow(s),veh/h/ln	1752	1774	1757	1752	1717	0
Q Serve(g_s), s	1.8	1.8	0.5	1.2	0.8	0.0
Cycle Q Clear(g_c), s	1.8	1.8	0.5	1.2	0.8	0.0
Prop In Lane		0.23	1.00		0.78	0.20
Lane Grp Cap(c), veh/h	551	558	78	1927	118	0
V/C Ratio(X)	0.32	0.33	0.46	0.19	0.51	0.00
Avail Cap(c_a), veh/h	1373	1390	409	4231	545	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.2	6.2	11.0	2.7	10.6	0.0
Incr Delay (d2), s/veh	0.3	0.3	4.2	0.0	3.3	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	0.9	0.9	0.3	0.6	0.5	0.0
LnGrp Delay(d),s/veh	6.5	6.5	15.2	2.7	13.9	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	359			394	60	
Approach Delay, s/veh	6.5			3.8	13.9	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.1	5.6	11.9				17.5
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		2.8	2.5	3.8				3.2
Green Ext Time (p_c), s		0.0	0.0	3.6				4.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	266	38	0	362	0	10
Future Vol, veh/h	266	38	0	362	0	10
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	289	41	0	393	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	507	165
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	197	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	493	847
Stage 1	-	-	0	-	714	-
Stage 2	-	-	0	-	814	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	493	847
Mov Cap-2 Maneuver	-	-	-	-	493	-
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	814	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	847	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-
HCM Control Delay (s)	9.3	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

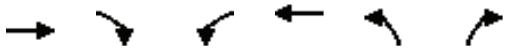
Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	91	412	0	0	458	57	6	0	2	49	0	32
Future Vol, veh/h	91	412	0	0	458	57	6	0	2	49	0	32
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	96	96	92	92	92	96	92	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	429	0	0	477	59	7	0	2	51	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	536	0	-	429	0	0	858	1155	215	912	-	268
Stage 1	-	-	-	-	-	-	619	619	-	507	-	-
Stage 2	-	-	-	-	-	-	239	536	-	405	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1028	-	0	1127	-	-	251	196	790	229	0	730
Stage 1	-	-	0	-	-	-	443	478	-	516	0	-
Stage 2	-	-	0	-	-	-	743	522	-	593	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1028	-	-	1127	-	-	223	178	790	212	-	730
Mov Cap-2 Maneuver	-	-	-	-	-	-	223	178	-	212	-	-
Stage 1	-	-	-	-	-	-	402	434	-	469	-	-
Stage 2	-	-	-	-	-	-	709	522	-	537	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	18.7	20.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	272	1028	-	1127	-	-	212	730
HCM Lane V/C Ratio	0.032	0.092	-	-	-	-	0.241	0.046
HCM Control Delay (s)	18.7	8.9	-	0	-	-	27.3	10.2
HCM Lane LOS	C	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.3	-	0	-	-	0.9	0.1



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	290	128	161	380	161	190
Future Volume (veh/h)	290	128	161	380	161	190
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	299	132	166	392	166	196
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	759	327	202	1902	443	394
Arrive On Green	0.31	0.31	0.11	0.54	0.25	0.25
Sat Flow, veh/h	2509	1042	1781	3647	1781	1585
Grp Volume(v), veh/h	218	213	166	392	166	196
Grp Sat Flow(s),veh/h/ln	1777	1681	1781	1777	1781	1585
Q Serve(g_s), s	3.6	3.7	3.4	2.1	2.9	3.9
Cycle Q Clear(g_c), s	3.6	3.7	3.4	2.1	2.9	3.9
Prop In Lane		0.62	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	558	528	202	1902	443	394
V/C Ratio(X)	0.39	0.40	0.82	0.21	0.37	0.50
Avail Cap(c_a), veh/h	1391	1316	938	2782	2164	1926
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	9.9	10.0	16.1	4.5	11.5	11.9
Incr Delay (d2), s/veh	1.5	1.7	8.1	0.2	1.4	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.2	1.6	0.4	1.1	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.5	11.7	24.2	4.7	12.9	14.5
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	431			558	362	
Approach Delay, s/veh	11.6			10.5	13.7	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.2	15.6				23.8	13.2
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.4	5.7				4.1	5.9
Green Ext Time (p_c), s	0.4	5.9				5.9	3.5

Intersection Summary			
HCM 6th Ctrl Delay		11.7	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	127	156	184	41	131	30	261	193	64	32	217	150
Future Volume (veh/h)	127	156	184	41	131	30	261	193	64	32	217	150
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	131	161	0	42	135	0	269	199	0	33	224	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	860		93	651		333	1155		74	639	
Arrive On Green	0.11	0.24	0.00	0.05	0.18	0.00	0.19	0.33	0.00	0.04	0.18	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	131	161	0	42	135	0	269	199	0	33	224	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.3	1.7	0.0	1.1	1.5	0.0	6.8	1.9	0.0	0.9	2.6	0.0
Cycle Q Clear(g_c), s	3.3	1.7	0.0	1.1	1.5	0.0	6.8	1.9	0.0	0.9	2.6	0.0
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	198	860		93	651		333	1155		74	639	
V/C Ratio(X)	0.66	0.19		0.45	0.21		0.81	0.17		0.45	0.35	
Avail Cap(c_a), veh/h	1000	2899		1378	2899		1378	2899		1000	2899	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.1	14.2	0.0	21.7	16.4	0.0	18.4	11.4	0.0	22.1	16.9	0.0
Incr Delay (d2), s/veh	3.8	0.3	0.0	3.4	0.4	0.0	4.7	0.2	0.0	4.2	0.9	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	1.4	0.6	0.0	0.5	0.6	0.0	2.8	0.6	0.0	0.4	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.9	14.5	0.0	25.1	16.8	0.0	23.0	11.6	0.0	26.3	17.8	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		292	A		177	A		468	A		257	A
Approach Delay, s/veh		18.7			18.7			18.2			18.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	19.3	6.5	15.4	12.8	12.5	9.2	12.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.9	3.9	3.1	3.7	8.8	4.6	5.3	3.5
Green Ext Time (p_c), s	0.1	2.7	0.1	2.1	0.8	3.0	0.3	1.7

Intersection Summary	
HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	451	998	195	543	0	994	0	289	0	0	4
Future Volume (veh/h)	21	451	998	195	543	0	994	0	289	0	0	4
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	22	465	0	201	560	0	1025	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	31	1051	470	249	2135	0	1339	0	597	0	3	0
Arrive On Green	0.02	0.30	0.00	0.14	0.42	0.00	0.38	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	22	465	0	201	560	0	1025	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.8	7.2	0.0	7.5	4.9	0.0	17.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.8	7.2	0.0	7.5	4.9	0.0	17.2	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	31	1051	470	249	2135	0	1339	0	597	0	3	0
V/C Ratio(X)	0.71	0.44	0.00	0.81	0.26	0.00	0.77	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	247	1865	834	390	2680	0	1558	0	695	0	259	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	33.1	19.1	0.0	28.1	12.6	0.0	18.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	25.7	0.6	0.0	6.8	0.1	0.0	2.7	0.0	0.0	0.0	0.0	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	0.6	3.6	0.0	4.1	2.3	0.0	8.8	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	58.7	19.7	0.0	35.0	12.8	0.0	21.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	E	B		C	B		C					
Approach Vol, veh/h		487			761			1025			0	
Approach Delay, s/veh		21.5			18.6			21.0			0.0	
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.6	24.3		29.8	5.2	32.7		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	9.5	9.2		19.2	2.8	6.9		0.0
Green Ext Time (p_c), s	0.3	10.1		6.5	0.0	10.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	1068	55	290	869	34	44	8	136	104	9	84
Future Volume (veh/h)	80	1068	55	290	869	34	44	8	136	104	9	84
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	82	1101	53	299	896	19	45	8	14	107	9	13
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	1471	71	347	2019	903	63	19	32	126	46	66
Arrive On Green	0.05	0.43	0.43	0.20	0.58	0.58	0.04	0.03	0.03	0.07	0.07	0.07
Sat Flow, veh/h	1757	3404	164	1757	3505	1568	1757	603	1055	1757	683	987
Grp Volume(v), veh/h	82	567	587	299	896	19	45	0	22	107	0	22
Grp Sat Flow(s),veh/h/ln	1757	1752	1816	1757	1752	1568	1757	0	1658	1757	0	1670
Q Serve(g_s), s	2.8	16.2	16.2	9.8	8.7	0.3	1.5	0.0	0.8	3.6	0.0	0.7
Cycle Q Clear(g_c), s	2.8	16.2	16.2	9.8	8.7	0.3	1.5	0.0	0.8	3.6	0.0	0.7
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.64	1.00		0.59
Lane Grp Cap(c), veh/h	95	757	785	347	2019	903	63	0	51	126	0	112
V/C Ratio(X)	0.87	0.75	0.75	0.86	0.44	0.02	0.72	0.00	0.43	0.85	0.00	0.20
Avail Cap(c_a), veh/h	573	879	911	573	2019	903	573	0	693	514	0	614
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.1	14.3	14.3	23.2	7.2	5.4	28.5	0.0	28.5	27.4	0.0	26.4
Incr Delay (d2), s/veh	20.1	4.2	4.1	7.2	0.3	0.0	14.2	0.0	8.0	14.0	0.0	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	1.8	8.6	8.9	5.4	4.2	0.1	1.0	0.0	0.5	2.2	0.0	0.4
LnGrp Delay(d),s/veh	48.2	18.5	18.3	30.4	7.6	5.5	42.8	0.0	36.5	41.5	0.0	27.2
LnGrp LOS	D	B	B	C	A	A	D		D	D		C
Approach Vol, veh/h		1236			1214			67			129	
Approach Delay, s/veh		20.4			13.2			40.7			39.0	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.8	29.9	8.3	5.8	7.2	38.5	6.1	8.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	11.8	18.2	5.6	2.8	4.8	10.7	3.5	2.7
Green Ext Time (p_c), s	0.6	7.6	0.2	0.2	0.1	17.4	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	915	133	188	524	205	127	67	129	159	103	107
Future Volume (veh/h)	131	915	133	188	524	205	127	67	129	159	103	107
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.96
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	135	943	127	194	540	188	131	69	-59	164	106	15
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	161	1495	201	230	1331	462	156	151	128	194	192	157
Arrive On Green	0.09	0.48	0.48	0.13	0.52	0.51	0.09	0.08	0.00	0.11	0.10	0.10
Sat Flow, veh/h	1757	3103	418	1757	2554	886	1757	1845	1568	1757	1845	1510
Grp Volume(v), veh/h	135	532	538	194	370	358	131	69	-59	164	106	15
Grp Sat Flow(s),veh/h/ln	1757	1752	1768	1757	1752	1688	1757	1845	1568	1757	1845	1510
Q Serve(g_s), s	6.2	18.6	18.6	8.9	10.5	10.7	6.0	2.9	0.0	7.5	4.5	0.7
Cycle Q Clear(g_c), s	6.2	18.6	18.6	8.9	10.5	10.7	6.0	2.9	0.0	7.5	4.5	0.7
Prop In Lane	1.00		0.24	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	844	852	230	913	879	156	151	128	194	192	157
V/C Ratio(X)	0.84	0.63	0.63	0.84	0.41	0.41	0.84	0.46	-0.46	0.84	0.55	0.10
Avail Cap(c_a), veh/h	385	981	990	984	1621	1561	299	584	496	406	763	625
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	15.9	15.9	34.9	11.9	12.1	36.9	36.0	0.0	35.8	35.0	33.3
Incr Delay (d2), s/veh	10.8	1.3	1.3	8.1	0.4	0.4	11.5	2.1	0.0	9.6	2.5	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	3.5	9.2	9.3	4.8	5.1	5.0	3.4	1.6	0.0	4.2	2.4	0.3
LnGrp Delay(d),s/veh	47.5	17.2	17.2	42.9	12.4	12.5	48.3	38.1	0.0	45.4	37.5	33.6
LnGrp LOS	D	B	B	D	B	B	D	D		D	D	C
Approach Vol, veh/h		1205			922			141			285	
Approach Delay, s/veh		20.6			18.8			63.6			41.8	
Approach LOS		C			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	43.6	13.1	10.7	11.5	46.8	11.3	12.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	16.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	10.9	20.6	9.5	4.9	8.2	12.7	8.0	6.5
Green Ext Time (p_c), s	0.6	17.3	0.3	0.9	0.2	29.7	0.2	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	188	8	117	2	42	13	61	134	8	5	127	171
Future Volume (veh/h)	188	8	117	2	42	13	61	134	8	5	127	171
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	1.00		0.99	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	194	8	105	2	43	-38	63	138	8	5	131	43
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	446	34	135	404	9999	0	90	987	57	7	602	190
Arrive On Green	0.27	0.27	0.29	0.27	0.27	0.00	0.05	0.29	0.29	0.00	0.23	0.23
Sat Flow, veh/h	841	129	504	981	15970	7135692	1757	3368	194	1757	2619	828
Grp Volume(v), veh/h	307	0	0	0	0	0	63	71	75	5	86	88
Grp Sat Flow(s),veh/h/ln	1475	0	0	0	0	0	1757	1752	1809	1757	1752	1694
Q Serve(g_s), s	4.5	0.0	0.0	0.0	0.0	0.0	0.9	0.8	0.8	0.1	1.1	1.1
Cycle Q Clear(g_c), s	5.1	0.0	0.0	0.0	0.0	0.0	0.9	0.8	0.8	0.1	1.1	1.1
Prop In Lane	0.63		0.34	0.29		-5.43	1.00		0.11	1.00		0.49
Lane Grp Cap(c), veh/h	615	0	0	0	0	0	90	514	530	7	403	390
V/C Ratio(X)	0.50	0.00	0.00	0.00	0.00	0.00	0.70	0.14	0.14	0.76	0.21	0.23
Avail Cap(c_a), veh/h	1184	0	0	0	0	0	1158	1980	2044	1158	1980	1914
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	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.9	0.0	0.0	0.0	0.0	0.0	12.4	6.9	6.9	13.3	8.3	8.3
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.0	0.0	0.0	9.5	0.2	0.2	96.7	0.4	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	2.1	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.4	0.2	0.5	0.6
LnGrp Delay(d),s/veh	9.5	0.0	0.0	0.0	0.0	0.0	21.9	7.1	7.1	110.0	8.7	8.7
LnGrp LOS	A						C	A	A	F	A	A
Approach Vol, veh/h		307			0			209			179	
Approach Delay, s/veh		9.5			0.0			11.5			11.5	
Approach LOS		A						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.7	11.8		11.1	5.4	10.1		11.1
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.1	2.8		0.0	2.9	3.1		7.1
Green Ext Time (p_c), s	0.0	2.7		0.0	0.1	2.7		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.6
HCM 2010 LOS	B

Notes

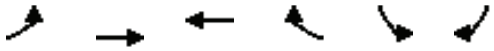
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	3	81	4	4	4	53	171	42	2	182	62
Future Vol, veh/h	28	3	81	4	4	4	53	171	42	2	182	62
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	29	3	84	4	4	4	55	176	43	2	188	64

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	424	555	127	409	565	113	252	0	0	222	0	0
Stage 1	224	224	-	309	309	-	-	-	-	-	-	-
Stage 2	200	331	-	100	256	-	-	-	-	-	-	-
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	512	436	896	524	431	915	1303	-	-	1337	-	-
Stage 1	755	715	-	673	656	-	-	-	-	-	-	-
Stage 2	780	641	-	892	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	488	416	895	455	411	912	1302	-	-	1336	-	-
Mov Cap-2 Maneuver	488	416	-	455	411	-	-	-	-	-	-	-
Stage 1	723	714	-	643	627	-	-	-	-	-	-	-
Stage 2	738	613	-	803	691	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	12	1.6	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1302	-	-	722	524	1336	-	-
HCM Lane V/C Ratio	0.042	-	-	0.16	0.024	0.002	-	-
HCM Control Delay (s)	7.9	-	-	10.9	12	7.7	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	0.1	0	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	78	278	165	188	109	158
Future Volume (vph)	78	278	165	188	109	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.92		0.94	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3225		3264	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3225		3264	1427
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	80	287	170	194	112	163
RTOR Reduction (vph)	0	0	125	0	60	70
Lane Group Flow (vph)	80	287	239	0	127	18
Confl. Peds. (#/hr)					1	
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	4.3	20.5	12.7		7.2	7.2
Effective Green, g (s)	3.8	20.5	12.7		7.2	7.2
Actuated g/C Ratio	0.11	0.57	0.36		0.20	0.20
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	186	2012	1147		658	287
v/s Ratio Prot	c0.05	0.08	c0.07			
v/s Ratio Perm					c0.04	0.01
v/c Ratio	0.43	0.14	0.21		0.19	0.06
Uniform Delay, d1	14.9	3.5	8.0		11.8	11.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.6	0.1	0.2		0.1	0.1
Delay (s)	16.5	3.6	8.2		12.0	11.6
Level of Service	B	A	A		B	B
Approach Delay (s)		6.4	8.2		11.9	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	35.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

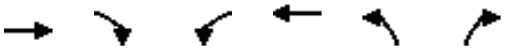
Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	361	66	0	601	48	136
Future Vol, veh/h	361	66	0	601	48	136
Conflicting Peds, #/hr	0	2	2	0	4	3
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	372	68	0	620	49	140

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	722	225
Stage 1	-	-	-	-	408	-
Stage 2	-	-	-	-	314	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	362	778
Stage 1	-	-	0	-	640	-
Stage 2	-	-	0	-	714	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	360	774
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	712	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	595	-	-	-
HCM Lane V/C Ratio	0.319	-	-	-
HCM Control Delay (s)	13.9	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.4	-	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	372	31	26	398	50	12
Future Volume (veh/h)	372	31	26	398	50	12
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	404	34	28	433	54	13
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1142	96	62	1978	103	25
Arrive On Green	0.35	0.35	0.04	0.56	0.08	0.08
Sat Flow, veh/h	3367	274	1757	3597	1365	329
Grp Volume(v), veh/h	215	223	28	433	68	0
Grp Sat Flow(s),veh/h/ln	1752	1796	1757	1752	1718	0
Q Serve(g_s), s	2.3	2.3	0.4	1.5	1.0	0.0
Cycle Q Clear(g_c), s	2.3	2.3	0.4	1.5	1.0	0.0
Prop In Lane		0.15	1.00		0.79	0.19
Lane Grp Cap(c), veh/h	611	626	62	1978	129	0
V/C Ratio(X)	0.35	0.36	0.45	0.22	0.53	0.00
Avail Cap(c_a), veh/h	1298	1331	387	4000	516	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.0	6.0	11.8	2.7	11.1	0.0
Incr Delay (d2), s/veh	0.3	0.3	5.0	0.1	3.3	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	1.1	1.2	0.3	0.7	0.6	0.0
LnGrp Delay(d),s/veh	6.4	6.4	16.8	2.8	14.4	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	438			461	68	
Approach Delay, s/veh	6.4			3.6	14.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.4	5.4	13.2				18.6
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		3.0	2.4	4.3				3.5
Green Ext Time (p_c), s		0.0	0.0	4.4				5.5

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	354	30	0	424	0	12
Future Vol, veh/h	354	30	0	424	0	12
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	385	33	0	461	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	631	209
Stage 1	-	-	-	-	401	-
Stage 2	-	-	-	-	230	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	411	794
Stage 1	-	-	0	-	642	-
Stage 2	-	-	0	-	783	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	411	794
Mov Cap-2 Maneuver	-	-	-	-	411	-
Stage 1	-	-	-	-	642	-
Stage 2	-	-	-	-	783	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	794	-	-	-
HCM Lane V/C Ratio	0.016	-	-	-
HCM Control Delay (s)	9.6	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

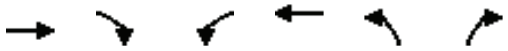
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	361	0	1	502	63	5	1	1	43	0	36
Future Vol, veh/h	107	361	0	1	502	63	5	1	1	43	0	36
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	95	95	92	92	92	95	92	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	380	0	1	528	66	5	1	1	45	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	594	0	-	380	0	0	872	1202	190	980	-	297
Stage 1	-	-	-	-	-	-	606	606	-	563	-	-
Stage 2	-	-	-	-	-	-	266	596	-	417	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	978	-	0	1175	-	-	245	183	820	204	0	699
Stage 1	-	-	0	-	-	-	451	485	-	478	0	-
Stage 2	-	-	0	-	-	-	716	490	-	584	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	978	-	-	1175	-	-	211	162	820	185	-	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	162	-	185	-	-
Stage 1	-	-	-	-	-	-	399	429	-	423	-	-
Stage 2	-	-	-	-	-	-	677	490	-	515	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0	21.6	21.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	225	978	-	1175	-	-	185	699
HCM Lane V/C Ratio	0.034	0.115	-	0.001	-	-	0.245	0.054
HCM Control Delay (s)	21.6	9.2	-	8.1	-	-	30.7	10.4
HCM Lane LOS	C	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.1	0.4	-	0	-	-	0.9	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	261	117	147	363	160	203
Future Volume (veh/h)	261	117	147	363	160	203
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	278	124	156	386	170	216
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	720	313	210	1821	478	425
Arrive On Green	0.30	0.30	0.12	0.51	0.27	0.27
Sat Flow, veh/h	2504	1048	1781	3647	1781	1585
Grp Volume(v), veh/h	203	199	156	386	170	216
Grp Sat Flow(s),veh/h/ln	1777	1682	1781	1777	1781	1585
Q Serve(g_s), s	3.3	3.4	3.1	2.2	2.8	4.2
Cycle Q Clear(g_c), s	3.3	3.4	3.1	2.2	2.8	4.2
Prop In Lane		0.62	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	531	502	210	1821	478	425
V/C Ratio(X)	0.38	0.40	0.74	0.21	0.36	0.51
Avail Cap(c_a), veh/h	1412	1336	976	2824	2196	1954
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	10.1	10.2	15.6	4.9	10.8	11.3
Incr Delay (d2), s/veh	1.6	1.7	5.1	0.2	1.2	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	1.3	0.5	1.1	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.7	11.9	20.7	5.1	12.0	13.8
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	402			542	386	
Approach Delay, s/veh	11.8			9.6	13.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.8	14.9				22.7	13.8
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.1	5.4				4.2	6.2
Green Ext Time (p_c), s	0.3	5.5				5.8	3.8

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	142	153	166	33	136	53	240	244	47	31	205	141
Future Volume (veh/h)	142	153	166	33	136	53	240	244	47	31	205	141
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	159	0	34	142	0	250	254	0	32	214	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	881		95	617		328	1088		91	615	
Arrive On Green	0.13	0.25	0.00	0.05	0.17	0.00	0.18	0.31	0.00	0.05	0.17	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	148	159	0	34	142	0	250	254	0	32	214	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	1.6	0.0	0.9	1.6	0.0	6.2	2.5	0.0	0.8	2.5	0.0
Cycle Q Clear(g_c), s	3.7	1.6	0.0	0.9	1.6	0.0	6.2	2.5	0.0	0.8	2.5	0.0
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	227	881		95	617		328	1088		91	615	
V/C Ratio(X)	0.65	0.18		0.36	0.23		0.76	0.23		0.35	0.35	
Avail Cap(c_a), veh/h	1027	2883		1407	2883		1407	2883		1027	2883	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.4	13.9	0.0	21.4	16.7	0.0	18.1	12.1	0.0	21.5	17.0	0.0
Incr Delay (d2), s/veh	3.1	0.3	0.0	2.3	0.5	0.0	3.7	0.3	0.0	2.3	0.9	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	1.5	0.6	0.0	0.4	0.6	0.0	2.5	0.9	0.0	0.4	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	14.1	0.0	23.6	17.1	0.0	21.8	12.4	0.0	23.8	17.9	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		307	A		176	A		504	A		246	A
Approach Delay, s/veh		18.2			18.4			17.1			18.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	18.8	6.0	16.1	12.1	12.6	9.5	12.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.8	4.5	2.9	3.6	8.2	4.5	5.7	3.6
Green Ext Time (p_c), s	0.0	3.5	0.1	2.1	0.7	2.9	0.4	1.8

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	940	410	50	910	10	220	0	60	10	0	0
Future Volume (veh/h)	10	940	410	50	910	10	220	0	60	10	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	959	0	51	929	10	224	0	0	10	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	4	1634	731	91	2647	28	494	0	220	4	0	0
Arrive On Green	0.00	0.47	0.00	0.05	0.52	0.49	0.14	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5137	55	3514	0	1568	1757	0	0
Grp Volume(v), veh/h	10	959	0	51	607	332	224	0	0	10	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1835	1757	0	1568	1757	0	0
Q Serve(g_s), s	0.1	9.5	0.0	1.3	5.0	5.1	2.8	0.0	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.1	9.5	0.0	1.3	5.0	5.1	2.8	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	4	1634	731	91	1730	946	494	0	220	4	0	0
V/C Ratio(X)	2.36	0.59	0.00	0.56	0.35	0.35	0.45	0.00	0.00	2.36	0.00	0.00
Avail Cap(c_a), veh/h	354	2675	1197	559	2563	1401	2235	0	997	354	0	0
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	23.5	9.3	0.0	21.8	6.8	6.8	18.6	0.0	0.0	23.5	0.0	0.0
Incr Delay (d2), s/veh	741.6	0.7	0.0	5.3	0.3	0.5	1.4	0.0	0.0	741.6	0.0	0.0
Initial Q Delay(d3),s/veh	165.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.3	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.7	0.0	0.8	2.3	2.6	1.4	0.0	0.0	0.9	0.0	0.0
LnGrp Delay(d),s/veh	930.4	10.0	0.0	27.2	7.0	7.2	20.0	0.0	0.0	930.4	0.0	0.0
LnGrp LOS	F	A		C	A	A	B			F		
Approach Vol, veh/h		969			990			224			10	
Approach Delay, s/veh		19.5			8.1			20.0			930.4	
Approach LOS		B			A			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	26.0		10.6	4.1	28.3		4.1
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	3.3	11.5		4.8	2.1	7.1		2.1
Green Ext Time (p_c), s	0.1	9.5		2.0	0.0	9.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	280	10	60	450	20	10	0	30	50	10	20
Future Volume (veh/h)	50	280	10	60	450	20	10	0	30	50	10	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	51	286	7	61	459	-4	10	0	-104	51	10	-27
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	69	1409	34	85	1446	647	7	0	363	69	0	319
Arrive On Green	0.04	0.40	0.40	0.05	0.41	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h	1757	3497	85	1757	3505	1568	1757	1845	0	1757	1845	0
Grp Volume(v), veh/h	51	143	150	61	459	-4	10	-104	-104	51	-17	-17
Grp Sat Flow(s),veh/h/ln	1757	1752	1830	1757	1752	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	0.7	1.3	1.3	0.8	2.1	0.0	0.1	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.7	1.3	1.3	0.8	2.1	0.0	0.1	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	69	706	737	85	1446	647	7	0	0	69	0	0
V/C Ratio(X)	0.74	0.20	0.20	0.71	0.32	-0.01	1.34	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	1454	2232	2330	1454	4464	1997	1454	0	0	1305	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.2	4.6	4.6	11.0	4.7	0.0	11.8	0.0	0.0	11.2	0.0	0.0
Incr Delay (d2), s/veh	14.7	0.3	0.3	10.5	0.3	0.0	269.9	0.0	0.0	14.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	46.8	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.7	0.7	0.6	1.0	0.0	1.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	25.9	4.9	4.9	21.6	4.9	0.0	328.6	0.0	0.0	25.9	0.0	0.0
LnGrp LOS	C	A	A	C	A		F			C		
Approach Vol, veh/h		344			516			-198			17	
Approach Delay, s/veh		8.0			6.9			-16.6			77.6	
Approach LOS		A			A			A			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.1	13.5	4.9	0.0	4.9	13.7	3.8	1.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	2.8	3.3	2.7	0.0	2.7	4.1	2.1	0.0
Green Ext Time (p_c), s	0.1	3.2	0.1	0.0	0.1	5.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	16.1
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	140	30	160	190	130	20	20	120	90	20	30
Future Volume (veh/h)	40	140	30	160	190	130	20	20	120	90	20	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	41	143	18	163	194	50	20	20	18	92	20	-3
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	56	705	87	197	846	213	16	112	95	127	229	194
Arrive On Green	0.03	0.22	0.21	0.11	0.31	0.29	0.01	0.06	0.06	0.07	0.12	0.00
Sat Flow, veh/h	1757	3137	389	1757	2774	698	1757	1845	1563	1757	1845	1568
Grp Volume(v), veh/h	41	79	82	163	121	123	20	20	18	92	20	-3
Grp Sat Flow(s),veh/h/ln	1757	1752	1774	1757	1752	1720	1757	1845	1563	1757	1845	1568
Q Serve(g_s), s	0.7	1.1	1.1	2.7	1.6	1.6	0.3	0.3	0.3	1.5	0.3	0.0
Cycle Q Clear(g_c), s	0.7	1.1	1.1	2.7	1.6	1.6	0.3	0.3	0.3	1.5	0.3	0.0
Prop In Lane	1.00		0.22	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	394	399	197	535	525	16	112	95	127	229	194
V/C Ratio(X)	0.74	0.20	0.21	0.83	0.23	0.23	1.26	0.18	0.19	0.72	0.09	-0.02
Avail Cap(c_a), veh/h	1048	2672	2705	2678	4414	4332	815	1590	1347	1106	2079	1767
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	0.00
Uniform Delay (d), s/veh	14.5	9.5	9.6	13.1	7.8	7.9	15.0	13.5	13.5	13.7	11.7	0.0
Incr Delay (d2), s/veh	17.2	0.4	0.4	8.6	0.3	0.3	191.9	0.8	1.0	7.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	23.7	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	0.6	1.8	0.8	0.8	1.0	0.2	0.2	1.0	0.2	0.0
LnGrp Delay(d),s/veh	31.7	9.8	9.9	21.7	8.1	8.3	230.6	14.2	14.4	21.2	11.9	0.0
LnGrp LOS	C	A	A	C	A	A	F	B	B	C	B	
Approach Vol, veh/h		202			407			58			109	
Approach Delay, s/veh		14.3			13.6			88.9			20.1	
Approach LOS		B			B			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	10.8	6.2	5.8	5.0	13.2	4.3	7.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	4.7	3.1	3.5	2.3	2.7	3.6	2.3	2.3
Green Ext Time (p_c), s	0.5	1.3	0.2	0.1	0.1	2.2	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	20	10	20	30	110	10	20	120	60
Future Volume (veh/h)	20	10	10	20	10	20	30	110	10	20	120	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		1.00	0.97		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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	20	10	0	20	10	0	31	112	6	20	122	34
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	351	16	0	351	16	0	23	1130	60	9	875	236
Arrive On Green	0.03	0.03	0.00	0.03	0.03	0.00	0.01	0.33	0.33	0.00	0.32	0.32
Sat Flow, veh/h	1090	545	0	1090	545	0	1757	3385	180	1757	2730	736
Grp Volume(v), veh/h	30	0	0	30	0	0	31	58	60	20	77	79
Grp Sat Flow(s),veh/h/ln	1635	0	0	1635	0	0	1757	1752	1813	1757	1752	1713
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.1	0.6	0.6
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.3	0.0	0.0	0.2	0.4	0.4	0.1	0.6	0.6
Prop In Lane	0.67		0.00	0.67		0.00	1.00		0.10	1.00		0.43
Lane Grp Cap(c), veh/h	367	0	0	367	0	0	23	585	605	9	562	549
V/C Ratio(X)	0.08	0.00	0.00	0.08	0.00	0.00	1.34	0.10	0.10	2.14	0.14	0.14
Avail Cap(c_a), veh/h	1697	0	0	1697	0	0	1632	2791	2887	1632	2791	2728
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	9.0	0.0	0.0	9.3	4.3	4.3	9.4	4.5	4.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	201.4	0.1	0.1	584.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.3	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	1.4	0.2	0.2	2.5	0.3	0.3
LnGrp Delay(d),s/veh	9.1	0.0	0.0	9.1	0.0	0.0	213.7	4.4	4.4	593.7	4.7	4.7
LnGrp LOS	A			A			F	A	A	F	A	A
Approach Vol, veh/h		30			30			149			176	
Approach Delay, s/veh		9.1			9.1			48.0			71.7	
Approach LOS		A			A			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	10.3		4.6	4.2	10.0		4.6
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.0	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.1	2.4		2.3	2.2	2.6		2.3
Green Ext Time (p_c), s	0.0	0.9		0.1	0.0	1.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	52.7
HCM 2010 LOS	D

Notes

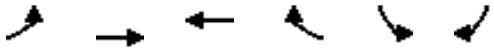
Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	10	100	10	80	10	60	160	90	50	10
Future Vol, veh/h	10	0	10	100	10	80	10	60	160	90	50	10
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	10	0	10	102	10	82	10	61	163	92	51	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	298	484	31	373	408	114	61	0	0	224	0	0
Stage 1	240	240	-	163	163	-	-	-	-	-	-	-
Stage 2	58	244	-	210	245	-	-	-	-	-	-	-
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	629	479	1033	556	529	914	1533	-	-	1335	-	-
Stage 1	739	703	-	820	760	-	-	-	-	-	-	-
Stage 2	944	700	-	770	700	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	530	443	1033	519	489	912	1533	-	-	1335	-	-
Mov Cap-2 Maneuver	530	443	-	519	489	-	-	-	-	-	-	-
Stage 1	734	654	-	814	755	-	-	-	-	-	-	-
Stage 2	841	695	-	710	652	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	13.2	0.3	4.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1533	-	-	701	632	1335	-	-
HCM Lane V/C Ratio	0.007	-	-	0.029	0.307	0.069	-	-
HCM Control Delay (s)	7.4	-	-	10.3	13.2	7.9	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.3	0.2	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	110	60	70	120	80	80
Future Volume (vph)	110	60	70	120	80	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.91		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3173		3314	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3173		3314	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	112	61	71	122	82	82
RTOR Reduction (vph)	0	0	75	0	25	44
Lane Group Flow (vph)	112	61	118	0	87	8
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	4.6	21.3	13.2		5.2	5.2
Effective Green, g (s)	4.1	21.3	13.2		5.2	5.2
Actuated g/C Ratio	0.12	0.62	0.38		0.15	0.15
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	208	2163	1214		499	215
v/s Ratio Prot	c0.06	0.02	c0.04			
v/s Ratio Perm					c0.03	0.01
v/c Ratio	0.54	0.03	0.10		0.17	0.04
Uniform Delay, d1	14.3	2.6	6.8		12.8	12.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.7	0.0	0.1		0.2	0.1
Delay (s)	17.0	2.6	6.9		12.9	12.6
Level of Service	B	A	A		B	B
Approach Delay (s)		11.9	6.9		12.8	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	34.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	140	30	0	180	25	75
Future Vol, veh/h	140	30	0	180	25	75
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	154	33	0	198	27	82

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	274	95
Stage 1	-	-	-	-	171	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	693	943
Stage 1	-	-	0	-	842	-
Stage 2	-	-	0	-	910	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	690	941
Mov Cap-2 Maneuver	-	-	-	-	690	-
Stage 1	-	-	-	-	841	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	863	-	-	-
HCM Lane V/C Ratio	0.127	-	-	-
HCM Control Delay (s)	9.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-

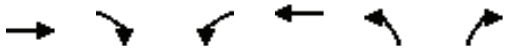
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	150	0	10	350	20	10	0	0	20	0	40
Future Vol, veh/h	20	150	0	10	350	20	10	0	0	20	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	174	0	11	407	23	11	0	0	23	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	430	0	-	174	0	0	446	672	87	574	-	215
Stage 1	-	-	-	-	-	-	220	220	-	441	-	-
Stage 2	-	-	-	-	-	-	226	452	-	133	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1126	-	0	1400	-	-	496	376	954	402	0	790
Stage 1	-	-	0	-	-	-	762	720	-	565	0	-
Stage 2	-	-	0	-	-	-	756	569	-	857	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1126	-	-	1400	-	-	456	365	954	393	-	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	456	365	-	393	-	-
Stage 1	-	-	-	-	-	-	747	706	-	554	-	-
Stage 2	-	-	-	-	-	-	704	563	-	839	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	13.1	11.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	456	1126	-	1400	-	-	393	790
HCM Lane V/C Ratio	0.024	0.021	-	0.008	-	-	0.059	0.059
HCM Control Delay (s)	13.1	8.3	-	7.6	-	-	14.7	9.8
HCM Lane LOS	B	A	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	0.1	-	0	-	-	0.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	120	40	80	230	60	60
Future Volume (veh/h)	120	40	80	230	60	60
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	132	44	88	253	66	66
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	714	229	127	1793	302	268
Arrive On Green	0.27	0.27	0.07	0.50	0.17	0.17
Sat Flow, veh/h	2739	849	1781	3647	1781	1585
Grp Volume(v), veh/h	87	89	88	253	66	66
Grp Sat Flow(s),veh/h/ln	1777	1717	1781	1777	1781	1585
Q Serve(g_s), s	0.9	1.0	1.2	0.9	0.8	0.9
Cycle Q Clear(g_c), s	0.9	1.0	1.2	0.9	0.8	0.9
Prop In Lane		0.49	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	480	464	127	1793	302	268
V/C Ratio(X)	0.18	0.19	0.69	0.14	0.22	0.25
Avail Cap(c_a), veh/h	2101	2030	1416	4201	3268	2908
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.9	6.9	11.1	3.2	8.8	8.8
Incr Delay (d2), s/veh	0.6	0.7	6.5	0.1	0.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.5	0.1	0.3	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.5	7.6	17.6	3.4	9.7	10.1
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	176			341	132	
Approach Delay, s/veh	7.5			7.1	9.9	
Approach LOS	A			A	A	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.8	10.6				16.4	8.2
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	3.2	3.0				2.9	2.9
Green Ext Time (p_c), s	0.2	2.2				3.7	1.2

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	70	70	50	140	30	110	90	20	20	90	60
Future Volume (veh/h)	50	70	70	50	140	30	110	90	20	20	90	60
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	77	0	55	154	0	121	99	0	22	99	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	121	744		121	744		210	1038		45	710	
Arrive On Green	0.07	0.21	0.00	0.07	0.21	0.00	0.12	0.29	0.00	0.03	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	55	77	0	55	154	0	121	99	0	22	99	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.2	0.7	0.0	1.2	1.4	0.0	2.5	0.8	0.0	0.5	0.9	0.0
Cycle Q Clear(g_c), s	1.2	0.7	0.0	1.2	1.4	0.0	2.5	0.8	0.0	0.5	0.9	0.0
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	121	744		121	744		210	1038		45	710	
V/C Ratio(X)	0.46	0.10		0.46	0.21		0.58	0.10		0.49	0.14	
Avail Cap(c_a), veh/h	1197	3468		1648	3468		1648	3468		1197	3468	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.7	12.6	0.0	17.7	12.9	0.0	16.5	10.2	0.0	19.0	13.0	0.0
Incr Delay (d2), s/veh	2.7	0.2	0.0	2.7	0.4	0.0	2.5	0.1	0.0	7.9	0.2	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	0.5	0.2	0.0	0.5	0.5	0.0	1.0	0.3	0.0	0.3	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.4	12.8	0.0	20.4	13.3	0.0	19.0	10.3	0.0	26.9	13.2	0.0
LnGrp LOS	C	B		C	B		B	B		C	B	
Approach Vol, veh/h		132	A		209	A		220	A		121	A
Approach Delay, s/veh		15.9			15.1			15.1			15.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	15.5	6.7	12.3	8.6	11.9	6.7	12.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.5	2.8	3.2	2.7	4.5	2.9	3.2	3.4
Green Ext Time (p_c), s	0.0	1.2	0.1	0.9	0.3	1.2	0.1	2.0

Intersection Summary	
HCM 6th Ctrl Delay	15.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	480	910	170	520	0	860	0	240	0	0	0
Future Volume (veh/h)	10	480	910	170	520	0	860	0	240	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	485	0	172	525	0	869	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	8	1125	503	220	2224	0	1260	0	562	0	3	0
Arrive On Green	0.00	0.32	0.00	0.13	0.44	0.00	0.36	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	485	0	172	525	0	869	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.3	6.7	0.0	5.8	4.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	6.7	0.0	5.8	4.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	8	1125	503	220	2224	0	1260	0	562	0	3	0
V/C Ratio(X)	1.23	0.43	0.00	0.78	0.24	0.00	0.69	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	271	2052	918	429	2949	0	1715	0	765	0	285	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	30.6	16.5	0.0	26.1	10.7	0.0	16.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	221.7	0.6	0.0	6.0	0.1	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	22.5	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	3.3	0.0	3.2	1.9	0.0	6.5	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	274.8	17.0	0.0	32.0	10.8	0.0	18.3	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	B		C	B		B					
Approach Vol, veh/h		495			697			869			0	
Approach Delay, s/veh		22.2			16.1			18.3			0.0	
Approach LOS		C			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	23.7		26.0	4.3	31.1		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	7.8	8.7		15.0	2.3	6.0		0.0
Green Ext Time (p_c), s	0.3	10.0		7.1	0.0	10.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.5
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	760	40	160	730	30	30	10	130	130	10	110
Future Volume (veh/h)	90	760	40	160	730	30	30	10	130	130	10	110
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	91	768	36	162	737	12	30	10	16	131	10	24
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	104	1589	74	197	1819	813	43	25	40	157	50	120
Arrive On Green	0.06	0.47	0.47	0.11	0.52	0.52	0.02	0.04	0.04	0.09	0.10	0.10
Sat Flow, veh/h	1757	3409	160	1757	3505	1566	1757	639	1022	1757	481	1156
Grp Volume(v), veh/h	91	395	409	162	737	12	30	0	26	131	0	34
Grp Sat Flow(s),veh/h/ln	1757	1752	1816	1757	1752	1566	1757	0	1661	1757	0	1637
Q Serve(g_s), s	2.8	8.5	8.5	4.9	7.0	0.2	0.9	0.0	0.8	4.0	0.0	1.0
Cycle Q Clear(g_c), s	2.8	8.5	8.5	4.9	7.0	0.2	0.9	0.0	0.8	4.0	0.0	1.0
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.62	1.00		0.71
Lane Grp Cap(c), veh/h	104	817	847	197	1819	813	43	0	65	157	0	171
V/C Ratio(X)	0.87	0.48	0.48	0.82	0.41	0.01	0.70	0.00	0.40	0.83	0.00	0.20
Avail Cap(c_a), veh/h	627	963	997	627	1925	860	627	0	760	563	0	659
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.5	10.0	10.0	23.7	8.0	6.4	26.4	0.0	25.6	24.5	0.0	22.4
Incr Delay (d2), s/veh	19.1	0.9	0.9	8.2	0.3	0.0	18.8	0.0	5.6	10.8	0.0	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	1.9	4.3	4.4	2.8	3.5	0.1	0.7	0.0	0.5	2.4	0.0	0.5
LnGrp Delay(d),s/veh	44.6	11.0	11.0	31.9	8.3	6.4	45.3	0.0	31.2	35.2	0.0	22.9
LnGrp LOS	D	B	B	C	A	A	D		C	D		C
Approach Vol, veh/h		895			911			56			165	
Approach Delay, s/veh		14.4			12.5			38.7			32.7	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	29.5	8.9	6.1	7.2	32.4	5.3	9.7
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.6	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	6.9	10.5	6.0	2.8	4.8	9.0	2.9	3.0
Green Ext Time (p_c), s	0.3	15.0	0.2	0.3	0.2	15.9	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	380	90	430	300	150	90	60	430	110	60	60
Future Volume (veh/h)	70	380	90	430	300	150	90	60	430	110	60	60
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	71	384	77	434	303	105	91	61	241	111	61	10
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	81	746	148	482	1243	423	107	350	297	133	377	320
Arrive On Green	0.05	0.26	0.25	0.27	0.48	0.48	0.06	0.19	0.19	0.08	0.20	0.20
Sat Flow, veh/h	1757	2916	579	1757	2570	873	1757	1845	1565	1757	1845	1563
Grp Volume(v), veh/h	71	229	232	434	205	203	91	61	241	111	61	10
Grp Sat Flow(s),veh/h/ln	1757	1752	1742	1757	1752	1691	1757	1845	1565	1757	1845	1563
Q Serve(g_s), s	3.1	8.8	9.0	18.7	5.4	5.6	4.0	2.2	11.6	4.9	2.1	0.4
Cycle Q Clear(g_c), s	3.1	8.8	9.0	18.7	5.4	5.6	4.0	2.2	11.6	4.9	2.1	0.4
Prop In Lane	1.00		0.33	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	81	448	446	482	848	818	107	350	297	133	377	320
V/C Ratio(X)	0.87	0.51	0.52	0.90	0.24	0.25	0.85	0.17	0.81	0.83	0.16	0.03
Avail Cap(c_a), veh/h	403	1028	1023	1031	1699	1639	314	612	519	426	800	678
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	37.1	25.0	25.1	27.4	11.8	11.9	36.4	26.6	30.4	35.7	25.6	25.0
Incr Delay (d2), s/veh	23.2	1.3	1.3	6.4	0.2	0.2	16.3	0.2	5.3	12.4	0.2	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	2.0	4.4	4.5	9.9	2.6	2.6	2.4	1.1	5.4	2.8	1.1	0.2
LnGrp Delay(d),s/veh	60.3	26.3	26.4	33.8	12.0	12.2	52.8	26.8	35.7	48.2	25.8	25.0
LnGrp LOS	E	C	C	C	B	B	D	C	D	D	C	C
Approach Vol, veh/h		532			842			393			182	
Approach Delay, s/veh		30.9			23.3			38.3			39.4	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.5	24.0	9.9	18.9	7.6	41.9	8.8	20.0
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	20.7	11.0	6.9	13.6	5.1	7.6	6.0	4.1
Green Ext Time (p_c), s	1.4	8.6	0.2	1.2	0.1	9.4	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	29.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	40	90	140	40	240	30	210	40	140	220	110
Future Volume (veh/h)	120	40	90	140	40	240	30	210	40	140	220	110
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	121	40	71	141	40	156	30	212	40	141	222	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	359	130	144	308	92	214	38	744	138	165	1018	127
Arrive On Green	0.30	0.30	0.31	0.30	0.30	0.31	0.02	0.25	0.25	0.09	0.32	0.32
Sat Flow, veh/h	662	437	485	526	311	722	1757	2951	547	1757	3136	391
Grp Volume(v), veh/h	232	0	0	337	0	0	30	124	128	141	123	127
Grp Sat Flow(s),veh/h/ln	1583	0	0	1559	0	0	1757	1752	1746	1757	1752	1774
Q Serve(g_s), s	0.0	0.0	0.0	2.5	0.0	0.0	0.6	1.9	2.0	2.7	1.7	1.7
Cycle Q Clear(g_c), s	3.6	0.0	0.0	6.1	0.0	0.0	0.6	1.9	2.0	2.7	1.7	1.7
Prop In Lane	0.52		0.31	0.42		0.46	1.00		0.31	1.00		0.22
Lane Grp Cap(c), veh/h	633	0	0	614	0	0	38	442	440	165	569	576
V/C Ratio(X)	0.37	0.00	0.00	0.55	0.00	0.00	0.80	0.28	0.29	0.85	0.22	0.22
Avail Cap(c_a), veh/h	938	0	0	939	0	0	916	1566	1560	916	1566	1586
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	0.0	0.0	10.3	0.0	0.0	16.4	10.1	10.1	15.0	8.2	8.2
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.8	0.0	0.0	30.3	0.5	0.5	11.6	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	1.8	0.0	0.0	2.8	0.0	0.0	0.6	1.0	1.0	1.8	0.9	0.9
LnGrp Delay(d),s/veh	9.9	0.0	0.0	11.0	0.0	0.0	46.6	10.6	10.6	26.6	8.5	8.5
LnGrp LOS	A			B			D	B	B	C	A	A
Approach Vol, veh/h		232			337			282			391	
Approach Delay, s/veh		9.9			11.0			14.5			15.0	
Approach LOS		A			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.2	12.5		14.0	4.7	14.9		14.0
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	4.7	4.0		8.1	2.6	3.7		5.6
Green Ext Time (p_c), s	0.3	4.4		2.7	0.0	4.4		3.1

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

Notes

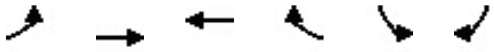
Intersection	
Int Delay, s/veh	34.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	20	60	200	10	130	40	130	310	120	280	50
Future Vol, veh/h	20	20	60	200	10	130	40	130	310	120	280	50
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	20	20	61	202	10	131	40	131	313	121	283	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	705	1079	172	765	948	223	337	0	0	445	0	0
Stage 1	554	554	-	369	369	-	-	-	-	-	-	-
Stage 2	151	525	-	396	579	-	-	-	-	-	-	-
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	321	215	839	291	258	777	1212	-	-	1104	-	-
Stage 1	482	509	-	620	617	-	-	-	-	-	-	-
Stage 2	833	525	-	598	496	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	230	184	835	221	221	776	1209	-	-	1103	-	-
Mov Cap-2 Maneuver	230	184	-	221	221	-	-	-	-	-	-	-
Stage 1	465	451	-	599	596	-	-	-	-	-	-	-
Stage 2	658	507	-	471	440	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	128.9	0.7	2.3
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1209	-	-	374	304	1103	-	-
HCM Lane V/C Ratio	0.033	-	-	0.27	1.13	0.11	-	-
HCM Control Delay (s)	8.1	-	-	18.1	128.9	8.7	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	14.1	0.4	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	240	80	110	240	260	280
Future Volume (vph)	240	80	110	240	260	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.90		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3116		3304	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3116		3304	1427
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	242	81	111	242	263	283
RTOR Reduction (vph)	0	0	189	0	43	134
Lane Group Flow (vph)	242	81	164	0	330	39
Confl. Peds. (#/hr)				2		
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	14.1	27.6	10.0		10.4	10.4
Effective Green, g (s)	13.6	27.6	10.0		10.4	10.4
Actuated g/C Ratio	0.30	0.60	0.22		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	517	2103	677		746	322
v/s Ratio Prot	c0.14	0.02	c0.05			
v/s Ratio Perm					c0.10	0.03
v/c Ratio	0.47	0.04	0.24		0.44	0.12
Uniform Delay, d1	13.2	3.8	14.9		15.3	14.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.0	0.4		0.4	0.2
Delay (s)	13.9	3.8	15.3		15.7	14.3
Level of Service	B	A	B		B	B
Approach Delay (s)		11.4	15.3		15.3	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	46.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	360	50	0	470	40	120
Future Vol, veh/h	360	50	0	470	40	120
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	396	55	0	516	44	132

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	686	227
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	262	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	381	776
Stage 1	-	-	0	-	628	-
Stage 2	-	-	0	-	758	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	379	774
Mov Cap-2 Maneuver	-	-	-	-	379	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	755	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	614	-	-	-
HCM Lane V/C Ratio	0.286	-	-	-
HCM Control Delay (s)	13.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.2	-	-	-

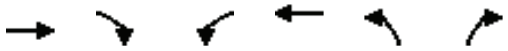
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	310	0	10	330	40	10	10	10	40	0	30
Future Vol, veh/h	70	310	0	10	330	40	10	10	10	40	0	30
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	360	0	11	384	47	11	11	11	47	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	431	0	-	360	0	0	736	975	180	778	-	216
Stage 1	-	-	-	-	-	-	522	522	-	430	-	-
Stage 2	-	-	-	-	-	-	214	453	-	348	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1125	-	0	1195	-	-	307	250	832	286	0	789
Stage 1	-	-	0	-	-	-	506	529	-	574	0	-
Stage 2	-	-	0	-	-	-	768	568	-	641	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1125	-	-	1195	-	-	275	229	832	255	-	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	275	229	-	255	-	-
Stage 1	-	-	-	-	-	-	470	491	-	533	-	-
Stage 2	-	-	-	-	-	-	725	561	-	574	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.2	17.3	16.9
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	326	1125	-	1195	-	-	255	789
HCM Lane V/C Ratio	0.1	0.072	-	0.009	-	-	0.182	0.044
HCM Control Delay (s)	17.3	8.4	-	8	-	-	22.2	9.8
HCM Lane LOS	C	A	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.3	0.2	-	0	-	-	0.7	0.1



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	200	110	150	220	120	110
Future Volume (veh/h)	200	110	150	220	120	110
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	206	113	155	227	124	113
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	646	338	186	1877	360	321
Arrive On Green	0.29	0.29	0.10	0.53	0.20	0.20
Sat Flow, veh/h	2329	1169	1781	3647	1781	1585
Grp Volume(v), veh/h	162	157	155	227	124	113
Grp Sat Flow(s),veh/h/ln	1777	1627	1781	1777	1781	1585
Q Serve(g_s), s	2.1	2.3	2.5	1.0	1.8	1.8
Cycle Q Clear(g_c), s	2.1	2.3	2.5	1.0	1.8	1.8
Prop In Lane		0.72	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	513	470	186	1877	360	321
V/C Ratio(X)	0.31	0.33	0.83	0.12	0.34	0.35
Avail Cap(c_a), veh/h	1735	1589	1170	3471	2699	2402
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.3	8.3	13.0	3.5	10.2	10.2
Incr Delay (d2), s/veh	1.2	1.4	9.2	0.1	1.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.7	1.2	0.1	0.7	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.5	9.7	22.2	3.6	11.6	11.9
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	319			382	237	
Approach Delay, s/veh	9.6			11.2	11.8	
Approach LOS	A			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.1	12.6				19.7	10.0
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	4.5	4.3				3.0	3.8
Green Ext Time (p_c), s	0.3	4.3				3.3	2.2

Intersection Summary			
HCM 6th Ctrl Delay		10.8	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	110	120	60	120	30	120	160	50	40	220	140
Future Volume (veh/h)	90	110	120	60	120	30	120	160	50	40	220	140
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	116	0	63	126	0	126	168	0	42	232	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	792		133	703		208	947		94	719	
Arrive On Green	0.10	0.22	0.00	0.07	0.20	0.00	0.12	0.27	0.00	0.05	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	95	116	0	63	126	0	126	168	0	42	232	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.1	1.1	0.0	1.4	1.2	0.0	2.8	1.5	0.0	1.0	2.3	0.0
Cycle Q Clear(g_c), s	2.1	1.1	0.0	1.4	1.2	0.0	2.8	1.5	0.0	1.0	2.3	0.0
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	178	792		133	703		208	947		94	719	
V/C Ratio(X)	0.53	0.15		0.47	0.18		0.61	0.18		0.45	0.32	
Avail Cap(c_a), veh/h	1130	3275		1556	3275		1556	3275		1130	3275	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.9	13.0	0.0	18.5	13.9	0.0	17.5	11.8	0.0	19.2	14.2	0.0
Incr Delay (d2), s/veh	2.5	0.2	0.0	2.6	0.3	0.0	2.8	0.2	0.0	3.3	0.7	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	0.9	0.4	0.0	0.6	0.4	0.0	1.1	0.5	0.0	0.4	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	13.3	0.0	21.1	14.2	0.0	20.4	12.0	0.0	22.5	14.9	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		211	A		189	A		294	A		274	A
Approach Delay, s/veh		16.4			16.5			15.6			16.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	15.1	7.1	13.3	8.9	12.5	8.2	12.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	3.5	3.4	3.1	4.8	4.3	4.1	3.2
Green Ext Time (p_c), s	0.1	2.2	0.1	1.4	0.3	3.1	0.2	1.6

Intersection Summary	
HCM 6th Ctrl Delay	16.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	760	910	190	750	0	910	0	290	0	0	0
Future Volume (veh/h)	10	760	910	190	750	0	910	0	290	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	776	0	194	765	0	929	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	1289	577	237	2502	0	1191	0	531	0	2	0
Arrive On Green	0.01	0.37	0.00	0.13	0.50	0.00	0.34	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	776	0	194	765	0	929	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.4	13.6	0.0	8.1	6.8	0.0	18.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	13.6	0.0	8.1	6.8	0.0	18.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	10	1289	577	237	2502	0	1191	0	531	0	2	0
V/C Ratio(X)	0.96	0.60	0.00	0.82	0.31	0.00	0.78	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	220	1665	745	348	2502	0	1391	0	621	0	231	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	37.7	19.4	0.0	31.9	11.3	0.0	22.5	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	118.4	1.0	0.0	9.4	0.1	0.0	3.3	0.0	0.0	0.0	0.0	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	0.5	6.7	0.0	4.6	3.2	0.0	9.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	156.1	20.4	0.0	41.3	11.5	0.0	25.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	C		D	B		C					
Approach Vol, veh/h		786			959			929			0	
Approach Delay, s/veh		22.1			17.5			25.9			0.0	
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.2	31.9		29.7	4.4	41.7		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	10.1	15.6		20.0	2.4	8.8		0.0
Green Ext Time (p_c), s	0.3	11.3		5.7	0.0	15.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	830	30	180	780	40	20	10	150	130	10	60
Future Volume (veh/h)	90	830	30	180	780	40	20	10	150	130	10	60
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	92	847	28	184	796	17	20	10	18	133	10	14
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	106	1573	52	223	1825	817	27	31	56	160	90	125
Arrive On Green	0.06	0.45	0.45	0.13	0.52	0.52	0.02	0.05	0.05	0.09	0.13	0.13
Sat Flow, veh/h	1757	3462	114	1757	3505	1568	1757	586	1054	1757	693	970
Grp Volume(v), veh/h	92	429	446	184	796	17	20	0	28	133	0	24
Grp Sat Flow(s),veh/h/ln	1757	1752	1824	1757	1752	1568	1757	0	1640	1757	0	1663
Q Serve(g_s), s	3.0	10.3	10.3	6.0	8.2	0.3	0.7	0.0	1.0	4.3	0.0	0.7
Cycle Q Clear(g_c), s	3.0	10.3	10.3	6.0	8.2	0.3	0.7	0.0	1.0	4.3	0.0	0.7
Prop In Lane	1.00		0.06	1.00		1.00	1.00		0.64	1.00		0.58
Lane Grp Cap(c), veh/h	106	796	829	223	1825	817	27	0	87	160	0	215
V/C Ratio(X)	0.87	0.54	0.54	0.82	0.44	0.02	0.75	0.00	0.32	0.83	0.00	0.11
Avail Cap(c_a), veh/h	587	901	938	587	1825	817	587	0	703	527	0	627
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.2	11.5	11.5	24.8	8.7	6.8	28.6	0.0	26.6	26.1	0.0	22.4
Incr Delay (d2), s/veh	18.3	1.2	1.2	7.5	0.4	0.0	33.9	0.0	3.0	10.4	0.0	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	2.0	5.2	5.4	3.3	4.0	0.1	0.6	0.0	0.5	2.6	0.0	0.4
LnGrp Delay(d),s/veh	45.5	12.7	12.7	32.3	9.0	6.8	62.5	0.0	29.5	36.5	0.0	22.7
LnGrp LOS	D	B	B	C	A	A	E		C	D		C
Approach Vol, veh/h		967			997			48			157	
Approach Delay, s/veh		15.8			13.3			43.3			34.4	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	30.5	9.3	7.1	7.5	34.4	4.9	11.5
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	7.0	12.3	6.3	3.0	5.0	10.2	2.7	2.7
Green Ext Time (p_c), s	0.4	14.2	0.2	0.2	0.2	16.0	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	470	110	440	330	130	100	60	420	110	40	40
Future Volume (veh/h)	60	470	110	440	330	130	100	60	420	110	40	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	61	480	100	449	337	104	102	61	268	112	41	7
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	70	804	166	489	1368	416	121	367	311	134	380	322
Arrive On Green	0.04	0.28	0.27	0.28	0.52	0.51	0.07	0.20	0.20	0.08	0.21	0.21
Sat Flow, veh/h	1757	2890	599	1757	2649	805	1757	1845	1563	1757	1845	1566
Grp Volume(v), veh/h	61	290	290	449	221	220	102	61	268	112	41	7
Grp Sat Flow(s),veh/h/ln	1757	1752	1737	1757	1752	1701	1757	1845	1563	1757	1845	1566
Q Serve(g_s), s	3.3	13.6	13.7	23.5	6.6	6.8	5.4	2.6	15.7	6.0	1.7	0.3
Cycle Q Clear(g_c), s	3.3	13.6	13.7	23.5	6.6	6.8	5.4	2.6	15.7	6.0	1.7	0.3
Prop In Lane	1.00		0.34	1.00		0.47	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	487	483	489	905	879	121	367	311	134	380	322
V/C Ratio(X)	0.87	0.59	0.60	0.92	0.24	0.25	0.84	0.17	0.86	0.84	0.11	0.02
Avail Cap(c_a), veh/h	334	851	843	853	1405	1364	260	506	429	352	662	562
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	45.3	29.6	29.7	33.2	12.7	12.8	43.6	31.5	36.7	43.2	30.6	30.0
Incr Delay (d2), s/veh	25.8	1.7	1.7	8.7	0.2	0.2	14.2	0.2	12.5	12.7	0.1	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	2.1	6.7	6.8	12.5	3.2	3.2	3.1	1.3	7.8	3.4	0.9	0.1
LnGrp Delay(d),s/veh	71.0	31.2	31.4	41.9	12.9	13.0	57.8	31.7	49.2	55.9	30.7	30.0
LnGrp LOS	E	C	C	D	B	B	E	C	D	E	C	C
Approach Vol, veh/h		641			890			431			160	
Approach Delay, s/veh		35.1			27.5			48.7			48.3	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.4	30.4	11.2	22.8	7.8	52.9	10.5	23.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	26.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	25.5	15.7	8.0	17.7	5.3	8.8	7.4	3.7
Green Ext Time (p_c), s	1.4	10.0	0.2	1.0	0.1	11.8	0.1	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	35.7
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	30	100	140	40	220	40	230	50	160	200	120
Future Volume (veh/h)	150	30	100	140	40	220	40	230	50	160	200	120
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	153	31	83	143	41	160	41	235	51	163	204	26
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	377	94	140	305	92	219	57	724	154	195	1034	130
Arrive On Green	0.30	0.30	0.31	0.30	0.30	0.31	0.03	0.25	0.25	0.11	0.33	0.33
Sat Flow, veh/h	730	317	473	540	310	739	1757	2876	613	1757	3133	394
Grp Volume(v), veh/h	267	0	0	344	0	0	41	142	144	163	113	117
Grp Sat Flow(s),veh/h/ln	1520	0	0	1589	0	0	1757	1752	1736	1757	1752	1774
Q Serve(g_s), s	0.0	0.0	0.0	1.6	0.0	0.0	0.8	2.3	2.4	3.2	1.6	1.7
Cycle Q Clear(g_c), s	4.7	0.0	0.0	6.3	0.0	0.0	0.8	2.3	2.4	3.2	1.6	1.7
Prop In Lane	0.57		0.31	0.42		0.47	1.00		0.35	1.00		0.22
Lane Grp Cap(c), veh/h	612	0	0	616	0	0	57	441	437	195	579	586
V/C Ratio(X)	0.44	0.00	0.00	0.56	0.00	0.00	0.71	0.32	0.33	0.84	0.20	0.20
Avail Cap(c_a), veh/h	876	0	0	904	0	0	871	1490	1477	871	1490	1509
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.3	0.0	0.0	10.8	0.0	0.0	16.9	10.7	10.8	15.4	8.5	8.5
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.8	0.0	0.0	15.1	0.6	0.6	9.0	0.2	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	2.2	0.0	0.0	3.0	0.0	0.0	0.6	1.2	1.2	2.0	0.8	0.9
LnGrp Delay(d),s/veh	10.8	0.0	0.0	11.6	0.0	0.0	32.0	11.3	11.4	24.4	8.7	8.7
LnGrp LOS	B			B			C	B	B	C	A	A
Approach Vol, veh/h		267			344			327			393	
Approach Delay, s/veh		10.8			11.6			13.9			15.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.9	12.9		14.5	5.2	15.6		14.5
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	5.2	4.4		8.3	2.8	3.7		6.7
Green Ext Time (p_c), s	0.3	4.5		2.9	0.1	4.5		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.1
HCM 2010 LOS	B

Notes

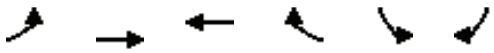
Intersection	
Int Delay, s/veh	33.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	20	70	200	20	110	30	190	280	90	320	30
Future Vol, veh/h	20	20	70	200	20	110	30	190	280	90	320	30
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	20	20	71	204	20	112	31	194	286	92	327	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	696	1067	179	755	939	242	357	0	0	480	0	0
Stage 1	526	526	-	398	398	-	-	-	-	-	-	-
Stage 2	170	541	-	357	541	-	-	-	-	-	-	-
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	326	219	830	296	261	756	1191	-	-	1072	-	-
Stage 1	501	525	-	596	599	-	-	-	-	-	-	-
Stage 2	812	516	-	631	516	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	237	195	830	228	232	755	1191	-	-	1070	-	-
Mov Cap-2 Maneuver	237	195	-	228	232	-	-	-	-	-	-	-
Stage 1	488	480	-	580	583	-	-	-	-	-	-	-
Stage 2	648	503	-	505	472	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.3	130	0.5	1.8
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1191	-	-	405	298	1070	-	-
HCM Lane V/C Ratio	0.026	-	-	0.277	1.13	0.086	-	-
HCM Control Delay (s)	8.1	-	-	17.3	130	8.7	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	13.9	0.3	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	220	140	100	280	350	240
Future Volume (vph)	220	140	100	280	350	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.89		0.98	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3117		3361	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3117		3361	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	224	143	102	286	357	245
RTOR Reduction (vph)	0	0	222	0	11	142
Lane Group Flow (vph)	224	143	166	0	402	47
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	13.2	27.1	10.4		11.6	11.6
Effective Green, g (s)	12.7	27.1	10.4		11.6	11.6
Actuated g/C Ratio	0.27	0.58	0.22		0.25	0.25
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	476	2033	694		834	354
v/s Ratio Prot	c0.13	0.04	c0.05			
v/s Ratio Perm					c0.12	0.03
v/c Ratio	0.47	0.07	0.24		0.48	0.13
Uniform Delay, d1	14.2	4.3	14.9		15.0	13.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.0	0.4		0.4	0.2
Delay (s)	14.9	4.3	15.3		15.4	13.8
Level of Service	B	A	B		B	B
Approach Delay (s)		10.8	15.3		14.9	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	390	60	0	520	30	145
Future Vol, veh/h	390	60	0	520	30	145
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	429	66	0	571	33	159

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	753	249
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	290	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	346	751
Stage 1	-	-	0	-	600	-
Stage 2	-	-	0	-	734	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	344	749
Mov Cap-2 Maneuver	-	-	-	-	344	-
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	731	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	623	-	-	-
HCM Lane V/C Ratio	0.309	-	-	-
HCM Control Delay (s)	13.3	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-

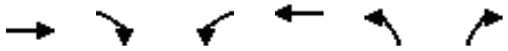
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	400	0	0	300	60	10	0	10	50	0	40
Future Vol, veh/h	100	400	0	0	300	60	10	0	10	50	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	96	96	92	92	92	96	92	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	417	0	0	313	63	11	0	11	52	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	376	0	-	417	0	0	782	1001	209	762	-	188
Stage 1	-	-	-	-	-	-	625	625	-	345	-	-
Stage 2	-	-	-	-	-	-	157	376	-	417	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1179	-	0	1138	-	-	284	241	797	294	0	822
Stage 1	-	-	0	-	-	-	439	475	-	644	0	-
Stage 2	-	-	0	-	-	-	829	615	-	584	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1179	-	-	1138	-	-	251	220	797	270	-	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	251	220	-	270	-	-
Stage 1	-	-	-	-	-	-	400	433	-	587	-	-
Stage 2	-	-	-	-	-	-	787	615	-	525	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0	15	16.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	382	1179	-	1138	-	-	270	822
HCM Lane V/C Ratio	0.057	0.088	-	-	-	-	0.193	0.051
HCM Control Delay (s)	15	8.3	-	0	-	-	21.5	9.6
HCM Lane LOS	C	A	-	A	-	-	C	A
HCM 95th %tile Q(veh)	0.2	0.3	-	0	-	-	0.7	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	280	130	170	250	140	200
Future Volume (veh/h)	280	130	170	250	140	200
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	289	134	175	258	144	206
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	733	331	214	1904	445	396
Arrive On Green	0.31	0.31	0.12	0.54	0.25	0.25
Sat Flow, veh/h	2471	1075	1781	3647	1781	1585
Grp Volume(v), veh/h	214	209	175	258	144	206
Grp Sat Flow(s),veh/h/ln	1777	1675	1781	1777	1781	1585
Q Serve(g_s), s	3.5	3.7	3.6	1.4	2.5	4.2
Cycle Q Clear(g_c), s	3.5	3.7	3.6	1.4	2.5	4.2
Prop In Lane		0.64	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	548	516	214	1904	445	396
V/C Ratio(X)	0.39	0.40	0.82	0.14	0.32	0.52
Avail Cap(c_a), veh/h	1381	1302	931	2762	2148	1912
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	10.1	10.2	16.0	4.3	11.4	12.1
Incr Delay (d2), s/veh	1.6	1.7	7.5	0.1	1.1	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	1.2	1.6	0.3	0.9	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.7	11.9	23.5	4.5	12.5	14.8
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	423			433	350	
Approach Delay, s/veh	11.8			12.1	13.9	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.5	15.5				24.0	13.3
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.6	5.7				3.4	6.2
Green Ext Time (p_c), s	0.4	5.8				3.8	3.4

Intersection Summary	
HCM 6th Ctrl Delay	12.5
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	160	170	50	110	40	140	200	70	40	260	160
Future Volume (veh/h)	130	160	170	50	110	40	140	200	70	40	260	160
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	134	165	0	52	113	0	144	206	0	41	268	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	882		113	693		214	973		91	728	
Arrive On Green	0.12	0.25	0.00	0.06	0.19	0.00	0.12	0.27	0.00	0.05	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	134	165	0	52	113	0	144	206	0	41	268	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.2	1.6	0.0	1.2	1.2	0.0	3.4	2.0	0.0	1.0	2.9	0.0
Cycle Q Clear(g_c), s	3.2	1.6	0.0	1.2	1.2	0.0	3.4	2.0	0.0	1.0	2.9	0.0
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	208	882		113	693		214	973		91	728	
V/C Ratio(X)	0.64	0.19		0.46	0.16		0.67	0.21		0.45	0.37	
Avail Cap(c_a), veh/h	1072	3106		1476	3106		1476	3106		1072	3106	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.6	13.1	0.0	19.9	14.7	0.0	18.5	12.3	0.0	20.3	15.1	0.0
Incr Delay (d2), s/veh	3.3	0.3	0.0	2.9	0.3	0.0	3.6	0.3	0.0	3.4	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	1.3	0.6	0.0	0.5	0.4	0.0	1.4	0.7	0.0	0.4	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	13.3	0.0	22.8	15.0	0.0	22.2	12.6	0.0	23.7	15.9	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		299	A		165	A		350	A		309	A
Approach Delay, s/veh		17.2			17.5			16.5			16.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	16.1	6.8	14.9	9.3	13.0	9.1	12.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	4.0	3.2	3.6	5.4	4.9	5.2	3.2
Green Ext Time (p_c), s	0.1	2.8	0.1	2.2	0.4	3.7	0.3	1.4

Intersection Summary	
HCM 6th Ctrl Delay	16.9
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	480	1250	240	580	0	990	15	290	0	15	0
Future Volume (veh/h)	20	480	1250	240	580	0	990	15	290	0	15	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	21	495	0	247	598	0	1032	0	0	0	15	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	30	989	442	286	2155	0	1217	0	543	0	21	0
Arrive On Green	0.02	0.28	0.00	0.16	0.43	0.00	0.35	0.00	0.00	0.00	0.01	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	21	495	0	247	598	0	1032	0	0	0	15	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	1.0	9.6	0.0	11.1	6.3	0.0	22.1	0.0	0.0	0.0	0.7	0.0
Cycle Q Clear(g_c), s	1.0	9.6	0.0	11.1	6.3	0.0	22.1	0.0	0.0	0.0	0.7	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	30	989	442	286	2155	0	1217	0	543	0	21	0
V/C Ratio(X)	0.70	0.50	0.00	0.86	0.28	0.00	0.85	0.00	0.00	0.00	0.71	0.00
Avail Cap(c_a), veh/h	206	1555	696	325	2234	0	1299	0	580	0	216	0
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	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	39.7	24.4	0.0	33.1	15.1	0.0	24.6	0.0	0.0	0.0	40.0	0.0
Incr Delay (d2), s/veh	25.5	0.8	0.0	18.9	0.1	0.0	5.9	0.0	0.0	0.0	34.8	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	0.7	4.7	0.0	6.9	2.9	0.0	11.6	0.0	0.0	0.0	0.5	0.0
LnGrp Delay(d),s/veh	65.1	25.2	0.0	52.0	15.2	0.0	30.5	0.0	0.0	0.0	74.8	0.0
LnGrp LOS	E	C		D	B		C				E	
Approach Vol, veh/h		516			845			1032			15	
Approach Delay, s/veh		26.8			26.0			30.5			74.8	
Approach LOS		C			C			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.2	26.9		32.1	5.4	38.7		4.9
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	13.1	11.6		24.1	3.0	8.3		2.7
Green Ext Time (p_c), s	0.2	10.3		4.0	0.0	11.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	990	60	365	1070	45	50	30	140	115	30	90
Future Volume (veh/h)	80	990	60	365	1070	45	50	30	140	115	30	90
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	82	1021	57	376	1103	22	52	31	17	119	31	17
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	94	1277	71	419	1975	883	69	60	33	143	107	59
Arrive On Green	0.05	0.38	0.38	0.24	0.56	0.56	0.04	0.05	0.05	0.08	0.10	0.10
Sat Flow, veh/h	1757	3375	188	1757	3505	1568	1757	1121	615	1757	1121	615
Grp Volume(v), veh/h	82	530	548	376	1103	22	52	0	48	119	0	48
Grp Sat Flow(s),veh/h/ln	1757	1752	1811	1757	1752	1568	1757	0	1736	1757	0	1736
Q Serve(g_s), s	3.0	17.4	17.4	13.4	12.9	0.4	1.9	0.0	1.7	4.3	0.0	1.7
Cycle Q Clear(g_c), s	3.0	17.4	17.4	13.4	12.9	0.4	1.9	0.0	1.7	4.3	0.0	1.7
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.35	1.00		0.35
Lane Grp Cap(c), veh/h	94	663	685	419	1975	883	69	0	93	143	0	166
V/C Ratio(X)	0.87	0.80	0.80	0.90	0.56	0.02	0.75	0.00	0.52	0.83	0.00	0.29
Avail Cap(c_a), veh/h	531	816	843	531	1975	883	531	0	673	477	0	593
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.3	17.9	17.9	23.8	9.0	6.2	30.7	0.0	29.7	29.2	0.0	27.1
Incr Delay (d2), s/veh	20.9	6.3	6.1	15.3	0.6	0.0	15.2	0.0	6.1	11.8	0.0	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	2.0	9.6	9.8	8.3	6.3	0.2	1.2	0.0	1.0	2.6	0.0	0.8
LnGrp Delay(d),s/veh	51.2	24.2	24.0	39.0	9.6	6.3	45.9	0.0	35.8	41.0	0.0	28.1
LnGrp LOS	D	C	C	D	A	A	D		D	D		C
Approach Vol, veh/h		1160			1501			100			167	
Approach Delay, s/veh		26.0			16.9			41.1			37.3	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.4	28.4	9.2	7.5	7.4	40.3	6.5	10.2
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.6	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	15.4	19.4	6.3	3.7	5.0	14.9	3.9	3.7
Green Ext Time (p_c), s	0.5	5.0	0.2	0.5	0.1	14.1	0.1	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.5
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	520	140	550	420	233	130	100	544	170	160	130
Future Volume (veh/h)	140	520	140	550	420	233	130	100	544	170	160	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.98
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	144	536	128	567	433	185	134	103	304	175	165	22
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	162	745	177	573	1200	508	151	340	287	193	385	319
Arrive On Green	0.09	0.27	0.26	0.33	0.50	0.50	0.09	0.18	0.18	0.11	0.21	0.21
Sat Flow, veh/h	1757	2805	667	1757	2401	1016	1757	1845	1558	1757	1845	1530
Grp Volume(v), veh/h	144	334	330	567	315	303	134	103	304	175	165	22
Grp Sat Flow(s),veh/h/ln	1757	1752	1720	1757	1752	1665	1757	1845	1558	1757	1845	1530
Q Serve(g_s), s	11.4	24.4	24.6	45.3	15.5	15.8	10.6	6.8	26.0	13.9	11.0	1.6
Cycle Q Clear(g_c), s	11.4	24.4	24.6	45.3	15.5	15.8	10.6	6.8	26.0	13.9	11.0	1.6
Prop In Lane	1.00		0.39	1.00		0.61	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	162	466	457	573	876	832	151	340	287	193	385	319
V/C Ratio(X)	0.89	0.72	0.72	0.99	0.36	0.36	0.89	0.30	1.06	0.91	0.43	0.07
Avail Cap(c_a), veh/h	224	572	561	573	945	897	174	340	287	237	445	369
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	63.2	47.0	47.1	47.2	21.5	21.7	63.7	49.7	57.5	62.0	48.5	44.8
Incr Delay (d2), s/veh	25.5	4.0	4.3	34.7	0.4	0.4	35.1	0.5	69.2	30.6	0.8	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	6.7	12.3	12.2	27.4	7.5	7.3	6.6	3.5	16.7	8.4	5.7	0.7
LnGrp Delay(d),s/veh	88.7	51.0	51.4	81.9	21.9	22.1	98.8	50.2	126.7	92.6	49.3	44.9
LnGrp LOS	F	D	D	F	C	C	F	D	F	F	D	D
Approach Vol, veh/h		808			1185			541			362	
Approach Delay, s/veh		57.9			50.6			105.2			69.9	
Approach LOS		E			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	50.0	41.5	19.5	30.0	17.0	74.4	16.1	33.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	47.3	26.6	15.9	28.0	13.4	17.8	12.6	13.0
Green Ext Time (p_c), s	0.0	10.4	0.2	0.0	0.1	16.5	0.1	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	65.3
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	80	120	170	90	250	60	280	50	220	270	180
Future Volume (veh/h)	200	80	120	170	90	250	60	280	50	220	270	180
Number	3	8	18	7	4	14	5	2	12	1	6	16
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		0.99	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	206	82	108	175	93	204	62	289	52	227	278	54
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	303	114	115	264	127	222	84	734	130	275	1044	200
Arrive On Green	0.35	0.35	0.36	0.35	0.35	0.36	0.05	0.25	0.25	0.16	0.36	0.36
Sat Flow, veh/h	545	322	325	465	360	628	1757	2971	528	1757	2934	562
Grp Volume(v), veh/h	396	0	0	472	0	0	62	169	172	227	164	168
Grp Sat Flow(s),veh/h/ln	1193	0	0	1453	0	0	1757	1752	1746	1757	1752	1744
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	1.7	4.0	4.1	6.2	3.3	3.4
Cycle Q Clear(g_c), s	16.1	0.0	0.0	15.3	0.0	0.0	1.7	4.0	4.1	6.2	3.3	3.4
Prop In Lane	0.52		0.27	0.37		0.43	1.00		0.30	1.00		0.32
Lane Grp Cap(c), veh/h	532	0	0	613	0	0	84	433	431	275	624	621
V/C Ratio(X)	0.74	0.00	0.00	0.77	0.00	0.00	0.74	0.39	0.40	0.82	0.26	0.27
Avail Cap(c_a), veh/h	533	0	0	614	0	0	622	1063	1060	622	1063	1058
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	0.0	15.0	0.0	0.0	23.2	15.5	15.6	20.2	11.3	11.3
Incr Delay (d2), s/veh	5.6	0.0	0.0	5.9	0.0	0.0	11.8	0.8	0.9	6.1	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	6.0	0.0	0.0	7.0	0.0	0.0	1.1	2.0	2.1	3.4	1.7	1.7
LnGrp Delay(d),s/veh	20.8	0.0	0.0	20.9	0.0	0.0	35.0	16.3	16.4	26.3	11.6	11.7
LnGrp LOS	C			C			D	B	B	C	B	B
Approach Vol, veh/h		396			472			403			559	
Approach Delay, s/veh		20.8			20.9			19.2			17.6	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.8	16.2		21.5	6.4	21.6		21.5
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	8.3	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	18.2	6.1		17.3	3.7	5.4		18.1
Green Ext Time (p_c), s	0.4	5.9		0.4	0.1	6.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	131

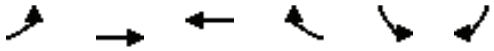
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	30	90	200	30	140	60	220	340	130	360	70
Future Vol, veh/h	30	30	90	200	30	140	60	220	340	130	360	70
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	31	31	93	206	31	144	62	227	351	134	371	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	929	1378	223	998	1239	292	443	0	0	579	0	0
Stage 1	675	675	-	528	528	-	-	-	-	-	-	-
Stage 2	254	703	-	470	711	-	-	-	-	-	-	-
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	221	142	777	~ 197	173	701	1106	-	-	984	-	-
Stage 1	408	449	-	499	523	-	-	-	-	-	-	-
Stage 2	725	436	-	541	432	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	126	116	776	~ 119	141	699	1105	-	-	983	-	-
Mov Cap-2 Maneuver	126	116	-	~ 119	141	-	-	-	-	-	-	-
Stage 1	385	388	-	470	493	-	-	-	-	-	-	-
Stage 2	508	411	-	378	373	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	41.9	$ 580.6	0.8	2.1
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1105	-	-	245	177	983	-	-
HCM Lane V/C Ratio	0.056	-	-	0.631	2.155	0.136	-	-
HCM Control Delay (s)	8.5	-	-	41.9	$ 580.6	9.2	-	-
HCM Lane LOS	A	-	-	E	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	3.8	30.3	0.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	270	170	110	350	320	330
Future Volume (vph)	270	170	110	350	320	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.89		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3104		3307	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3104		3307	1427
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	278	175	113	361	330	340
RTOR Reduction (vph)	0	0	285	0	38	162
Lane Group Flow (vph)	278	175	189	0	421	49
Confl. Peds. (#/hr)					1	
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	18.2	33.0	11.3		12.4	12.4
Effective Green, g (s)	17.7	33.0	11.3		12.4	12.4
Actuated g/C Ratio	0.33	0.62	0.21		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	580	2166	656		767	331
v/s Ratio Prot	c0.16	0.05	c0.06			
v/s Ratio Perm					c0.13	0.03
v/c Ratio	0.48	0.08	0.29		0.55	0.15
Uniform Delay, d1	14.2	4.1	17.7		18.0	16.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.0	0.5		0.8	0.2
Delay (s)	14.8	4.1	18.2		18.9	16.5
Level of Service	B	A	B		B	B
Approach Delay (s)		10.7	18.2		18.1	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	53.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	70	0	640	50	140
Future Vol, veh/h	400	70	0	640	50	140
Conflicting Peds, #/hr	0	2	2	0	4	3
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	412	72	0	660	52	144

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	784	247
Stage 1	-	-	-	-	450	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	330	753
Stage 1	-	-	0	-	609	-
Stage 2	-	-	0	-	697	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	328	749
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	695	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	560	-	-	-
HCM Lane V/C Ratio	0.35	-	-	-
HCM Control Delay (s)	14.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.6	-	-	-

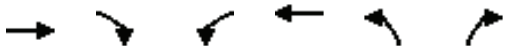
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	350	0	10	340	70	10	10	10	50	0	40
Future Vol, veh/h	110	350	0	10	340	70	10	10	10	50	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	95	95	92	92	92	95	92	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	368	0	11	358	74	11	11	11	53	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	432	0	-	368	0	0	801	1054	184	839	-	216
Stage 1	-	-	-	-	-	-	600	600	-	417	-	-
Stage 2	-	-	-	-	-	-	201	454	-	422	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1124	-	0	1187	-	-	276	225	827	259	0	789
Stage 1	-	-	0	-	-	-	455	488	-	584	0	-
Stage 2	-	-	0	-	-	-	782	568	-	580	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1124	-	-	1187	-	-	238	199	827	224	-	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	238	199	-	224	-	-
Stage 1	-	-	-	-	-	-	408	438	-	524	-	-
Stage 2	-	-	-	-	-	-	731	561	-	501	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.2	19.1	18.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	287	1124	-	1187	-	-	224	789
HCM Lane V/C Ratio	0.114	0.103	-	0.009	-	-	0.235	0.053
HCM Control Delay (s)	19.1	8.6	-	8.1	-	-	25.9	9.8
HCM Lane LOS	C	A	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.4	0.3	-	0	-	-	0.9	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	250	120	150	230	130	210
Future Volume (veh/h)	250	120	150	230	130	210
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	266	128	160	245	138	223
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	695	325	216	1824	473	421
Arrive On Green	0.30	0.30	0.12	0.51	0.27	0.27
Sat Flow, veh/h	2444	1099	1781	3647	1781	1585
Grp Volume(v), veh/h	199	195	160	245	138	223
Grp Sat Flow(s),veh/h/ln	1777	1673	1781	1777	1781	1585
Q Serve(g_s), s	3.2	3.4	3.1	1.3	2.2	4.4
Cycle Q Clear(g_c), s	3.2	3.4	3.1	1.3	2.2	4.4
Prop In Lane		0.66	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	525	494	216	1824	473	421
V/C Ratio(X)	0.38	0.39	0.74	0.13	0.29	0.53
Avail Cap(c_a), veh/h	1423	1340	984	2846	2214	1970
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	10.1	10.2	15.4	4.6	10.6	11.4
Incr Delay (d2), s/veh	1.5	1.7	5.0	0.1	0.9	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	1.3	0.3	0.8	1.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	11.7	11.9	20.3	4.7	11.5	14.0
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	394			405	361	
Approach Delay, s/veh	11.8			10.9	13.1	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.9	14.7				22.6	13.6
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.1	5.4				3.3	6.4
Green Ext Time (p_c), s	0.3	5.4				3.6	3.5

Intersection Summary	
HCM 6th Ctrl Delay	11.9
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	160	150	40	120	60	120	260	50	40	250	150
Future Volume (veh/h)	150	160	150	40	120	60	120	260	50	40	250	150
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	156	167	0	42	125	0	125	271	0	42	260	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	908		114	653		222	899		114	684	
Arrive On Green	0.14	0.26	0.00	0.06	0.18	0.00	0.12	0.25	0.00	0.06	0.19	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	156	167	0	42	125	0	125	271	0	42	260	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	1.6	0.0	1.0	1.3	0.0	2.9	2.7	0.0	1.0	2.8	0.0
Cycle Q Clear(g_c), s	3.7	1.6	0.0	1.0	1.3	0.0	2.9	2.7	0.0	1.0	2.8	0.0
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	241	908		114	653		222	899		114	684	
V/C Ratio(X)	0.65	0.18		0.37	0.19		0.56	0.30		0.37	0.38	
Avail Cap(c_a), veh/h	1093	3069		1498	3069		1498	3069		1093	3069	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.0	12.8	0.0	19.7	15.2	0.0	18.1	13.3	0.0	19.7	15.5	0.0
Incr Delay (d2), s/veh	2.9	0.3	0.0	2.0	0.4	0.0	2.2	0.5	0.0	2.0	0.9	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	1.5	0.6	0.0	0.4	0.5	0.0	1.2	0.9	0.0	0.4	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	13.0	0.0	21.7	15.6	0.0	20.4	13.8	0.0	21.7	16.4	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		323	A		167	A		396	A		302	A
Approach Delay, s/veh		16.8			17.1			15.9			17.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	15.6	6.3	15.7	9.0	13.0	9.5	12.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	4.7	3.0	3.6	4.9	4.8	5.7	3.3
Green Ext Time (p_c), s	0.1	3.7	0.1	2.2	0.3	3.6	0.4	1.6

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	940	422	57	910	10	283	0	71	10	0	0
Future Volume (veh/h)	10	940	422	57	910	10	283	0	71	10	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	959	0	58	929	10	289	0	0	10	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	5	1592	712	97	2604	28	580	0	259	5	0	0
Arrive On Green	0.00	0.45	0.00	0.06	0.51	0.49	0.16	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5137	55	3514	0	1568	1757	0	0
Grp Volume(v), veh/h	10	959	0	58	607	332	289	0	0	10	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	1835	1757	0	1568	1757	0	0
Q Serve(g_s), s	0.1	10.2	0.0	1.6	5.4	5.4	3.7	0.0	0.0	0.1	0.0	0.0
Cycle Q Clear(g_c), s	0.1	10.2	0.0	1.6	5.4	5.4	3.7	0.0	0.0	0.1	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	5	1592	712	97	1702	930	580	0	259	5	0	0
V/C Ratio(X)	1.96	0.60	0.00	0.60	0.36	0.36	0.50	0.00	0.00	1.96	0.00	0.00
Avail Cap(c_a), veh/h	336	2541	1137	531	2434	1331	2123	0	947	336	0	0
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	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.8	10.2	0.0	22.9	7.4	7.4	18.9	0.0	0.0	24.8	0.0	0.0
Incr Delay (d2), s/veh	553.9	0.8	0.0	5.7	0.3	0.5	1.4	0.0	0.0	553.9	0.0	0.0
Initial Q Delay(d3),s/veh	156.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	156.3	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	5.0	0.0	0.9	2.5	2.8	1.9	0.0	0.0	0.9	0.0	0.0
LnGrp Delay(d),s/veh	734.9	11.0	0.0	28.6	7.6	7.9	20.3	0.0	0.0	734.9	0.0	0.0
LnGrp LOS	F	B		C	A	A	C			F		
Approach Vol, veh/h		969			997			289			10	
Approach Delay, s/veh		18.4			8.9			20.3			734.9	
Approach LOS		B			A			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.8	26.6		12.2	4.1	29.2		4.1
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	3.6	12.2		5.7	2.1	7.4		2.1
Green Ext Time (p_c), s	0.1	9.4		2.6	0.0	9.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	354	10	60	470	20	10	0	30	50	10	20
Future Volume (veh/h)	50	354	10	60	470	20	10	0	30	50	10	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	51	361	8	61	480	-3	10	0	-105	51	10	-28
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	69	1444	32	86	1477	661	7	0	363	69	0	319
Arrive On Green	0.04	0.41	0.41	0.05	0.42	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h	1757	3506	78	1757	3505	1568	1757	1845	0	1757	1845	0
Grp Volume(v), veh/h	51	180	189	61	480	-3	10	-105	-105	51	-18	-18
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	0.7	1.6	1.6	0.8	2.2	0.0	0.1	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.7	1.6	1.6	0.8	2.2	0.0	0.1	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	69	722	754	86	1477	661	7	0	0	69	0	0
V/C Ratio(X)	0.74	0.25	0.25	0.71	0.32	0.00	1.37	0.00	0.00	0.74	0.00	0.00
Avail Cap(c_a), veh/h	1427	2191	2289	1427	4381	1960	1427	0	0	1281	0	0
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	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.4	4.6	4.6	11.2	4.7	0.0	12.0	0.0	0.0	11.4	0.0	0.0
Incr Delay (d2), s/veh	14.3	0.4	0.4	10.4	0.3	0.0	281.0	0.0	0.0	14.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	52.8	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.8	0.9	0.6	1.1	0.0	1.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	25.7	5.0	5.0	21.6	4.9	0.0	345.8	0.0	0.0	25.7	0.0	0.0
LnGrp LOS	C	A	A	C	A		F			C		
Approach Vol, veh/h		420			538			-200			15	
Approach Delay, s/veh		7.5			6.8			-17.3			87.5	
Approach LOS		A			A			A			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.2	13.9	4.9	0.0	4.9	14.1	3.8	1.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	2.8	3.6	2.7	0.0	2.7	4.2	2.1	0.0
Green Ext Time (p_c), s	0.1	4.1	0.1	0.0	0.1	5.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	200	30	160	210	130	20	20	134	90	20	30
Future Volume (veh/h)	40	200	30	160	210	130	20	20	134	90	20	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	41	204	23	163	214	63	20	20	20	92	20	8
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	56	712	79	197	818	235	16	116	98	127	233	198
Arrive On Green	0.03	0.22	0.21	0.11	0.30	0.29	0.01	0.06	0.06	0.07	0.13	0.13
Sat Flow, veh/h	1757	3178	354	1757	2688	771	1757	1845	1563	1757	1845	1566
Grp Volume(v), veh/h	41	111	116	163	138	139	20	20	20	92	20	8
Grp Sat Flow(s),veh/h/ln	1757	1752	1780	1757	1752	1707	1757	1845	1563	1757	1845	1566
Q Serve(g_s), s	0.7	1.6	1.6	2.7	1.8	1.9	0.3	0.3	0.4	1.6	0.3	0.1
Cycle Q Clear(g_c), s	0.7	1.6	1.6	2.7	1.8	1.9	0.3	0.3	0.4	1.6	0.3	0.1
Prop In Lane	1.00		0.20	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	393	399	197	533	519	16	116	98	127	233	198
V/C Ratio(X)	0.74	0.28	0.29	0.83	0.26	0.27	1.26	0.17	0.20	0.72	0.09	0.04
Avail Cap(c_a), veh/h	1045	2663	2706	2670	4400	4285	813	1585	1343	1103	2072	1759
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	14.5	9.7	9.8	13.2	7.9	8.1	15.0	13.4	13.5	13.7	11.7	11.6
Incr Delay (d2), s/veh	17.2	0.6	0.6	8.6	0.4	0.4	189.3	0.7	1.0	7.5	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	23.2	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.8	0.9	1.8	0.9	0.9	1.0	0.2	0.2	1.0	0.2	0.1
LnGrp Delay(d),s/veh	31.7	10.3	10.4	21.7	8.3	8.5	227.5	14.1	14.5	21.3	11.8	11.7
LnGrp LOS	C	B	B	C	A	A	F	B	B	C	B	B
Approach Vol, veh/h		268			440			60			120	
Approach Delay, s/veh		13.6			13.3			85.4			19.0	
Approach LOS		B			B			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	10.8	6.2	5.9	5.0	13.2	4.3	7.8
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	16.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	4.7	3.6	3.6	2.4	2.7	3.9	2.3	2.3
Green Ext Time (p_c), s	0.5	1.9	0.2	0.1	0.1	2.5	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	10	10	11	10	15	30	129	10	20	120	60
Future Volume (veh/h)	20	10	10	11	10	15	30	129	10	20	120	60
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		1.00	0.97		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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	20	10	0	11	10	0	31	132	6	20	122	34
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	349	16	0	317	24	0	23	1140	52	9	875	236
Arrive On Green	0.03	0.03	0.00	0.03	0.03	0.00	0.01	0.33	0.33	0.00	0.32	0.32
Sat Flow, veh/h	1055	527	0	882	801	0	1757	3415	154	1757	2730	736
Grp Volume(v), veh/h	30	0	0	21	0	0	31	67	71	20	77	79
Grp Sat Flow(s),veh/h/ln	1582	0	0	1683	0	0	1757	1752	1817	1757	1752	1713
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.1	0.6	0.6
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.5	0.5	0.1	0.6	0.6
Prop In Lane	0.67		0.00	0.52		0.00	1.00		0.08	1.00		0.43
Lane Grp Cap(c), veh/h	365	0	0	341	0	0	23	585	607	9	562	549
V/C Ratio(X)	0.08	0.00	0.00	0.06	0.00	0.00	1.34	0.12	0.12	2.14	0.14	0.14
Avail Cap(c_a), veh/h	1692	0	0	1731	0	0	1632	2791	2894	1632	2791	2728
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	9.0	0.0	0.0	9.3	4.3	4.3	9.4	4.5	4.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	201.4	0.1	0.1	584.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.3	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.1	0.0	0.0	1.4	0.3	0.3	2.5	0.3	0.3
LnGrp Delay(d),s/veh	9.1	0.0	0.0	9.1	0.0	0.0	213.7	4.5	4.5	593.7	4.7	4.7
LnGrp LOS	A			A			F	A	A	F	A	A
Approach Vol, veh/h		30			21			169			176	
Approach Delay, s/veh		9.1			9.1			42.8			71.7	
Approach LOS		A			A			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.0	10.3		4.6	4.2	10.0		4.6
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.1	2.5		2.2	2.2	2.6		2.3
Green Ext Time (p_c), s	0.0	1.0		0.0	0.0	1.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	51.3
HCM 2010 LOS	D

Notes

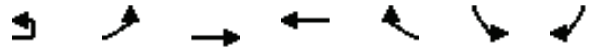
Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	0	10	90	10	74	10	85	160	90	41	10
Future Vol, veh/h	10	0	10	90	10	74	10	85	160	90	41	10
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	10	0	10	92	10	76	10	87	163	92	42	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	302	501	26	394	425	127	52	0	0	250	0	0
Stage 1	231	231	-	189	189	-	-	-	-	-	-	-
Stage 2	71	270	-	205	236	-	-	-	-	-	-	-
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	625	468	1040	538	517	896	1545	-	-	1305	-	-
Stage 1	748	710	-	792	740	-	-	-	-	-	-	-
Stage 2	928	682	-	775	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	529	432	1040	501	478	894	1545	-	-	1305	-	-
Mov Cap-2 Maneuver	529	432	-	501	478	-	-	-	-	-	-	-
Stage 1	744	660	-	787	736	-	-	-	-	-	-	-
Stage 2	831	678	-	713	657	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.3	13.2	0.3	5.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1545	-	-	701	614	1305	-	-
HCM Lane V/C Ratio	0.007	-	-	0.029	0.289	0.07	-	-
HCM Control Delay (s)	7.3	-	-	10.3	13.2	8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.2	0.2	-	-



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	29	135	104	82	120	77	64
Future Volume (vph)	29	135	104	82	120	77	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	0.95	0.95		0.97	0.91
Frt		1.00	1.00	0.91		0.97	0.85
Flt Protected		0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)		1752	3505	3194		3337	1427
Flt Permitted		0.23	1.00	1.00		0.96	1.00
Satd. Flow (perm)		422	3505	3194		3337	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	138	106	84	122	79	65
RTOR Reduction (vph)	0	0	0	93	0	18	40
Lane Group Flow (vph)	0	168	106	113	0	81	5
Turn Type	custom	Prot	NA	NA		Perm	Perm
Protected Phases		1	6	2			
Permitted Phases	1					4	4
Actuated Green, G (s)		18.0	32.3	10.8		5.4	5.4
Effective Green, g (s)		17.5	32.3	10.8		5.4	5.4
Actuated g/C Ratio		0.38	0.71	0.24		0.12	0.12
Clearance Time (s)		3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)		161	2477	754		394	168
v/s Ratio Prot			0.03	c0.04			
v/s Ratio Perm		c0.40				c0.02	0.00
v/c Ratio		1.04	0.04	0.15		0.21	0.03
Uniform Delay, d1		14.1	2.0	13.8		18.2	17.8
Progression Factor		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		82.9	0.0	0.2		0.3	0.1
Delay (s)		97.0	2.0	14.0		18.5	17.9
Level of Service		F	A	B		B	B
Approach Delay (s)			60.3	14.0		18.3	
Approach LOS			E	B		B	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	45.7	Sum of lost time (s)	16.5
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	240	30	0	180	25	75
Future Vol, veh/h	240	30	0	180	25	75
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	264	33	0	198	27	82

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	384	150
Stage 1	-	-	-	-	281	-
Stage 2	-	-	-	-	103	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	591	870
Stage 1	-	-	0	-	741	-
Stage 2	-	-	0	-	910	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	588	868
Mov Cap-2 Maneuver	-	-	-	-	588	-
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	907	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	776	-	-	-
HCM Lane V/C Ratio	0.142	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.5	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	133	12	10	166	67	16
Future Volume (veh/h)	133	12	10	166	67	16
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	145	13	11	180	73	17
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	689	61	26	1582	137	32
Arrive On Green	0.21	0.21	0.01	0.45	0.10	0.10
Sat Flow, veh/h	3349	289	1757	3597	1379	321
Grp Volume(v), veh/h	77	81	11	180	91	0
Grp Sat Flow(s),veh/h/ln	1752	1794	1757	1752	1719	0
Q Serve(g_s), s	0.7	0.7	0.1	0.6	1.0	0.0
Cycle Q Clear(g_c), s	0.7	0.7	0.1	0.6	1.0	0.0
Prop In Lane		0.16	1.00		0.80	0.19
Lane Grp Cap(c), veh/h	371	380	26	1582	171	0
V/C Ratio(X)	0.21	0.21	0.42	0.11	0.53	0.00
Avail Cap(c_a), veh/h	1619	1658	483	4990	644	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.5	6.5	9.8	3.2	8.6	0.0
Incr Delay (d2), s/veh	0.3	0.3	10.5	0.0	2.6	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	0.4	0.4	0.1	0.3	0.6	0.0
LnGrp Delay(d),s/veh	6.8	6.8	20.3	3.2	11.2	0.0
LnGrp LOS	A	A	C	A	B	
Approach Vol, veh/h	158			191	91	
Approach Delay, s/veh	6.8			4.2	11.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.5	4.8	8.7				13.5
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		3.0	2.1	2.7				2.6
Green Ext Time (p_c), s		0.1	0.0	1.6				1.9

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	138	11	0	176	0	17
Future Vol, veh/h	138	11	0	176	0	17
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	150	12	0	191	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	252	81
Stage 1	-	-	-	-	156	-
Stage 2	-	-	-	-	96	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	712	959
Stage 1	-	-	0	-	853	-
Stage 2	-	-	0	-	914	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	712	959
Mov Cap-2 Maneuver	-	-	-	-	712	-
Stage 1	-	-	-	-	853	-
Stage 2	-	-	-	-	914	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	959	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-
HCM Control Delay (s)	8.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

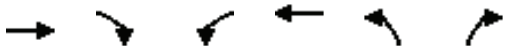
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	162	0	10	385	20	10	0	0	20	0	40
Future Vol, veh/h	20	162	0	10	385	20	10	0	0	20	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	188	0	11	448	23	11	0	0	23	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	471	0	-	188	0	0	480	727	94	622	-	236
Stage 1	-	-	-	-	-	-	234	234	-	482	-	-
Stage 2	-	-	-	-	-	-	246	493	-	140	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1087	-	0	1384	-	-	469	349	944	371	0	766
Stage 1	-	-	0	-	-	-	748	710	-	534	0	-
Stage 2	-	-	0	-	-	-	736	545	-	849	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1087	-	-	1384	-	-	430	338	944	362	-	766
Mov Cap-2 Maneuver	-	-	-	-	-	-	430	338	-	362	-	-
Stage 1	-	-	-	-	-	-	732	695	-	523	-	-
Stage 2	-	-	-	-	-	-	684	539	-	831	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	13.6	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	430	1087	-	1384	-	-	362	766
HCM Lane V/C Ratio	0.025	0.021	-	0.008	-	-	0.064	0.061
HCM Control Delay (s)	13.6	8.4	-	7.6	-	-	15.6	10
HCM Lane LOS	B	A	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0.1	-	0	-	-	0.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	130	42	80	261	64	60
Future Volume (veh/h)	130	42	80	261	64	60
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	143	46	88	287	70	66
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	726	226	127	1795	306	272
Arrive On Green	0.27	0.27	0.07	0.51	0.17	0.17
Sat Flow, veh/h	2763	829	1781	3647	1781	1585
Grp Volume(v), veh/h	93	96	88	287	70	66
Grp Sat Flow(s),veh/h/ln	1777	1721	1781	1777	1781	1585
Q Serve(g_s), s	1.0	1.1	1.2	1.1	0.8	0.9
Cycle Q Clear(g_c), s	1.0	1.1	1.2	1.1	0.8	0.9
Prop In Lane		0.48	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	483	468	127	1795	306	272
V/C Ratio(X)	0.19	0.20	0.69	0.16	0.23	0.24
Avail Cap(c_a), veh/h	2081	2016	1403	4163	3238	2881
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	6.9	6.9	11.2	3.3	8.8	8.9
Incr Delay (d2), s/veh	0.7	0.7	6.5	0.2	1.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.5	0.1	0.3	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.6	7.7	17.7	3.5	9.8	10.1
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	189			375	136	
Approach Delay, s/veh	7.6			6.8	9.9	
Approach LOS	A			A	A	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	5.8	10.7				16.5	8.3
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	3.2	3.1				3.1	2.9
Green Ext Time (p_c), s	0.2	2.4				4.3	1.2

Intersection Summary	
HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	72	78	50	146	30	135	90	20	20	112	60
Future Volume (veh/h)	50	72	78	50	146	30	135	90	20	20	112	60
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	79	0	55	160	0	148	99	0	22	123	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	733		120	733		228	1078		45	713	
Arrive On Green	0.07	0.21	0.00	0.07	0.21	0.00	0.13	0.30	0.00	0.03	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	55	79	0	55	160	0	148	99	0	22	123	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.2	0.7	0.0	1.2	1.5	0.0	3.2	0.8	0.0	0.5	1.2	0.0
Cycle Q Clear(g_c), s	1.2	0.7	0.0	1.2	1.5	0.0	3.2	0.8	0.0	0.5	1.2	0.0
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	120	733		120	733		228	1078		45	713	
V/C Ratio(X)	0.46	0.11		0.46	0.22		0.65	0.09		0.48	0.17	
Avail Cap(c_a), veh/h	1172	3398		1615	3398		1615	3398		1172	3398	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.1	13.0	0.0	18.1	13.3	0.0	16.7	10.0	0.0	19.4	13.3	0.0
Incr Delay (d2), s/veh	2.7	0.2	0.0	2.7	0.4	0.0	3.1	0.1	0.0	7.8	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	0.5	0.2	0.0	0.5	0.5	0.0	1.3	0.3	0.0	0.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	13.1	0.0	20.8	13.7	0.0	19.8	10.1	0.0	27.1	13.6	0.0
LnGrp LOS	C	B		C	B		B	B		C	B	
Approach Vol, veh/h		134	A		215	A		247	A		145	A
Approach Delay, s/veh		16.3			15.5			15.9			15.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	16.2	6.7	12.3	9.2	12.1	6.7	12.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	2.5	2.8	3.2	2.7	5.2	3.2	3.2	3.5
Green Ext Time (p_c), s	0.0	1.2	0.1	0.9	0.4	1.5	0.1	2.1

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	480	863	176	520	0	978	0	287	0	0	0
Future Volume (veh/h)	10	480	863	176	520	0	978	0	287	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	485	0	178	525	0	988	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	9	1083	484	225	2175	0	1333	0	595	0	3	0
Arrive On Green	0.01	0.31	0.00	0.13	0.43	0.00	0.38	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	485	0	178	525	0	988	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.3	7.3	0.0	6.4	4.3	0.0	15.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.3	7.3	0.0	6.4	4.3	0.0	15.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	9	1083	484	225	2175	0	1333	0	595	0	3	0
V/C Ratio(X)	1.13	0.45	0.00	0.79	0.24	0.00	0.74	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	255	1931	864	403	2774	0	1613	0	720	0	268	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	32.5	18.1	0.0	27.6	11.8	0.0	17.5	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	180.5	0.6	0.0	6.1	0.1	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	7.1	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	3.6	0.0	3.5	2.0	0.0	8.1	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	220.1	18.7	0.0	33.8	11.9	0.0	19.7	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	B		C	B		B					
Approach Vol, veh/h		495			703			988			0	
Approach Delay, s/veh		22.8			17.4			19.7			0.0	
Approach LOS		C			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	24.2		28.8	4.3	32.2		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	8.4	9.3		17.9	2.3	6.3		0.0
Green Ext Time (p_c), s	0.3	9.9		6.9	0.0	10.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	925	40	160	689	30	30	10	130	130	10	110
Future Volume (veh/h)	90	925	40	160	689	30	30	10	130	130	10	110
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	91	934	37	162	696	13	30	10	15	131	10	25
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	104	1642	65	197	1859	831	43	25	38	158	48	120
Arrive On Green	0.06	0.48	0.48	0.11	0.53	0.53	0.02	0.04	0.04	0.09	0.10	0.10
Sat Flow, veh/h	1757	3437	136	1757	3505	1566	1757	666	999	1757	467	1168
Grp Volume(v), veh/h	91	476	495	162	696	13	30	0	25	131	0	35
Grp Sat Flow(s),veh/h/ln	1757	1752	1820	1757	1752	1566	1757	0	1665	1757	0	1635
Q Serve(g_s), s	2.9	11.0	11.0	5.1	6.6	0.2	1.0	0.0	0.8	4.1	0.0	1.1
Cycle Q Clear(g_c), s	2.9	11.0	11.0	5.1	6.6	0.2	1.0	0.0	0.8	4.1	0.0	1.1
Prop In Lane	1.00		0.07	1.00		1.00	1.00		0.60	1.00		0.71
Lane Grp Cap(c), veh/h	104	837	869	197	1859	831	43	0	63	158	0	168
V/C Ratio(X)	0.87	0.57	0.57	0.82	0.37	0.02	0.70	0.00	0.40	0.83	0.00	0.21
Avail Cap(c_a), veh/h	606	929	965	606	1859	831	606	0	736	543	0	636
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.4	10.6	10.6	24.6	7.8	6.3	27.4	0.0	26.6	25.3	0.0	23.3
Incr Delay (d2), s/veh	19.2	1.3	1.3	8.3	0.3	0.0	18.6	0.0	5.7	10.7	0.0	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	1.9	5.6	5.8	2.9	3.2	0.1	0.7	0.0	0.5	2.5	0.0	0.5
LnGrp Delay(d),s/veh	45.6	11.9	11.9	32.8	8.0	6.3	46.0	0.0	32.3	36.0	0.0	23.9
LnGrp LOS	D	B	B	C	A	A	D		C	D		C
Approach Vol, veh/h		1062			871			55			166	
Approach Delay, s/veh		14.8			12.6			39.8			33.5	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	31.0	9.1	6.1	7.4	34.0	5.4	9.8
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	7.1	13.0	6.1	2.8	4.9	8.6	3.0	3.1
Green Ext Time (p_c), s	0.3	14.0	0.2	0.3	0.2	17.1	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	719	90	284	405	150	90	60	256	110	60	60
Future Volume (veh/h)	70	719	90	284	405	150	90	60	256	110	60	60
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	71	726	82	287	409	132	91	61	63	111	61	10
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	82	1331	150	336	1474	471	106	151	127	133	179	151
Arrive On Green	0.05	0.42	0.41	0.19	0.56	0.56	0.06	0.08	0.08	0.08	0.10	0.10
Sat Flow, veh/h	1757	3175	358	1757	2615	835	1757	1845	1563	1757	1845	1558
Grp Volume(v), veh/h	71	400	408	287	273	268	91	61	63	111	61	10
Grp Sat Flow(s),veh/h/ln	1757	1752	1781	1757	1752	1697	1757	1845	1563	1757	1845	1558
Q Serve(g_s), s	2.8	11.9	11.9	10.9	5.5	5.7	3.5	2.2	2.7	4.3	2.1	0.4
Cycle Q Clear(g_c), s	2.8	11.9	11.9	10.9	5.5	5.7	3.5	2.2	2.7	4.3	2.1	0.4
Prop In Lane	1.00		0.20	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	734	747	336	988	957	106	151	127	133	179	151
V/C Ratio(X)	0.87	0.55	0.55	0.85	0.28	0.28	0.86	0.41	0.49	0.83	0.34	0.07
Avail Cap(c_a), veh/h	459	1170	1190	1173	1933	1873	357	696	590	485	910	769
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	32.6	15.1	15.1	26.9	7.8	7.9	32.1	30.0	30.3	31.4	29.1	28.3
Incr Delay (d2), s/veh	22.4	0.9	0.9	6.2	0.2	0.2	17.3	1.7	2.9	12.6	1.1	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	1.8	5.9	6.0	5.8	2.7	2.7	2.2	1.2	1.2	2.5	1.1	0.2
LnGrp Delay(d),s/veh	55.0	16.0	16.0	33.1	8.0	8.1	49.4	31.8	33.2	44.0	30.2	28.5
LnGrp LOS	D	B	B	C	A	A	D	C	C	D	C	C
Approach Vol, veh/h		879			828			215			182	
Approach Delay, s/veh		19.1			16.7			39.7			38.5	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.2	32.9	9.2	9.6	7.2	42.8	8.2	10.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	12.9	13.9	6.3	4.7	4.8	7.7	5.5	4.1
Green Ext Time (p_c), s	0.9	14.5	0.2	0.8	0.1	18.4	0.1	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	17	100	61	40	118	20	158	20	62	152	110
Future Volume (veh/h)	120	17	100	61	40	118	20	158	20	62	152	110
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	121	17	81	62	40	33	20	160	20	63	154	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	381	44	114	329	141	82	9	798	98	89	890	158
Arrive On Green	0.20	0.20	0.22	0.20	0.20	0.22	0.01	0.25	0.25	0.05	0.30	0.30
Sat Flow, veh/h	750	219	569	559	705	409	1757	3140	387	1757	2972	529
Grp Volume(v), veh/h	219	0	0	135	0	0	20	88	92	63	90	92
Grp Sat Flow(s),veh/h/ln	1539	0	0	1673	0	0	1757	1752	1775	1757	1752	1749
Q Serve(g_s), s	1.5	0.0	0.0	0.0	0.0	0.0	0.1	1.0	1.0	0.9	0.9	0.9
Cycle Q Clear(g_c), s	3.0	0.0	0.0	1.6	0.0	0.0	0.1	1.0	1.0	0.9	0.9	0.9
Prop In Lane	0.55		0.37	0.46		0.24	1.00		0.22	1.00		0.30
Lane Grp Cap(c), veh/h	538	0	0	551	0	0	9	445	451	89	525	524
V/C Ratio(X)	0.41	0.00	0.00	0.25	0.00	0.00	2.13	0.20	0.20	0.71	0.17	0.18
Avail Cap(c_a), veh/h	1283	0	0	1325	0	0	1270	2172	2200	1270	2172	2168
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	8.3	0.0	0.0	12.0	7.1	7.1	11.3	6.3	6.3
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.2	0.0	0.0	579.3	0.3	0.3	9.8	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	0.8	0.0	0.0	1.6	0.5	0.5	0.6	0.5	0.5
LnGrp Delay(d),s/veh	9.3	0.0	0.0	8.6	0.0	0.0	591.6	7.4	7.4	21.2	6.5	6.5
LnGrp LOS	A			A			F	A	A	C	A	A
Approach Vol, veh/h		219			135			200			245	
Approach Delay, s/veh		9.3			8.6			65.8			10.3	
Approach LOS		A			A			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.2	10.1		8.8	4.1	11.2		8.8
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.6	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	2.9	3.0		3.6	2.1	2.9		5.0
Green Ext Time (p_c), s	0.1	3.1		1.8	0.0	3.1		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	7	60	97	10	63	40	115	151	62	201	50
Future Vol, veh/h	20	7	60	97	10	63	40	115	151	62	201	50
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	20	7	61	98	10	64	40	116	153	63	203	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	501	707	132	506	656	135	257	0	0	270	0	0
Stage 1	357	357	-	274	274	-	-	-	-	-	-	-
Stage 2	144	350	-	232	382	-	-	-	-	-	-	-
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	451	357	890	447	382	886	1298	-	-	1283	-	-
Stage 1	631	624	-	706	679	-	-	-	-	-	-	-
Stage 2	841	629	-	747	609	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	384	328	886	384	351	885	1296	-	-	1283	-	-
Mov Cap-2 Maneuver	384	328	-	384	351	-	-	-	-	-	-	-
Stage 1	610	592	-	684	657	-	-	-	-	-	-	-
Stage 2	745	609	-	653	577	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	16.5	1	1.6
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1296	-	-	616	483	1283	-	-
HCM Lane V/C Ratio	0.031	-	-	0.143	0.356	0.049	-	-
HCM Control Delay (s)	7.9	-	-	11.8	16.5	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	1.6	0.2	-	-



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	25	199	175	154	107	155	203
Future Volume (vph)	25	199	175	154	107	155	203
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes		1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	0.94		0.95	0.85
Flt Protected		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)		1752	3505	3272		3279	1427
Flt Permitted		0.23	1.00	1.00		0.97	1.00
Satd. Flow (perm)		419	3505	3272		3279	1427
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	25	201	177	156	108	157	205
RTOR Reduction (vph)	0	0	0	85	0	75	96
Lane Group Flow (vph)	0	226	177	179	0	172	19
Confl. Peds. (#/hr)					2		
Turn Type	custom	Prot	NA	NA		Perm	Perm
Protected Phases		1	6	2			
Permitted Phases	1					4	4
Actuated Green, G (s)		18.1	31.5	9.9		7.8	7.8
Effective Green, g (s)		17.6	31.5	9.9		7.8	7.8
Actuated g/C Ratio		0.37	0.67	0.21		0.16	0.16
Clearance Time (s)		3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)		155	2334	684		540	235
v/s Ratio Prot			0.05	c0.05			
v/s Ratio Perm		c0.54				c0.05	0.01
v/c Ratio		1.46	0.08	0.26		0.32	0.08
Uniform Delay, d1		14.8	2.8	15.6		17.4	16.7
Progression Factor		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		238.1	0.0	0.4		0.3	0.1
Delay (s)		253.0	2.8	16.1		17.7	16.9
Level of Service		F	A	B		B	B
Approach Delay (s)			143.1	16.1		17.5	
Approach LOS			F	B		B	

Intersection Summary			
HCM 2000 Control Delay	66.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

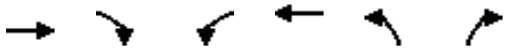
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	405	50	0	471	40	120
Future Vol, veh/h	405	50	0	471	40	120
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	445	55	0	518	44	132

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	737	252
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	263	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	354	748
Stage 1	-	-	0	-	592	-
Stage 2	-	-	0	-	757	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	352	746
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	591	-
Stage 2	-	-	-	-	754	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	583	-	-	-
HCM Lane V/C Ratio	0.302	-	-	-
HCM Control Delay (s)	13.8	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	417	33	28	405	37	9
Future Volume (veh/h)	417	33	28	405	37	9
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	453	36	30	440	40	10
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1207	96	66	2043	80	20
Arrive On Green	0.37	0.37	0.04	0.58	0.06	0.06
Sat Flow, veh/h	3383	261	1757	3597	1347	337
Grp Volume(v), veh/h	241	248	30	440	51	0
Grp Sat Flow(s),veh/h/ln	1752	1799	1757	1752	1718	0
Q Serve(g_s), s	2.5	2.6	0.4	1.5	0.7	0.0
Cycle Q Clear(g_c), s	2.5	2.6	0.4	1.5	0.7	0.0
Prop In Lane		0.14	1.00		0.78	0.20
Lane Grp Cap(c), veh/h	643	660	66	2043	102	0
V/C Ratio(X)	0.37	0.38	0.45	0.22	0.50	0.00
Avail Cap(c_a), veh/h	1287	1321	384	3967	512	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	5.9	5.9	11.9	2.5	11.5	0.0
Incr Delay (d2), s/veh	0.4	0.4	4.8	0.1	3.7	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	1.3	1.3	0.3	0.7	0.4	0.0
LnGrp Delay(d),s/veh	6.2	6.2	16.7	2.6	15.2	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	489			470	51	
Approach Delay, s/veh	6.2			3.5	15.2	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.0	5.4	13.7				19.2
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		2.7	2.4	4.6				3.5
Green Ext Time (p_c), s		0.0	0.0	4.7				5.9

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	393	33	0	433	0	9
Future Vol, veh/h	393	33	0	433	0	9
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	427	36	0	471	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	680	232
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	235	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	382	767
Stage 1	-	-	0	-	610	-
Stage 2	-	-	0	-	779	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	382	767
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	767	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-
HCM Control Delay (s)	9.8	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

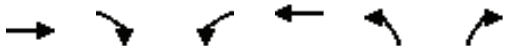
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	354	0	10	502	40	10	10	10	40	0	30
Future Vol, veh/h	70	354	0	10	502	40	10	10	10	40	0	30
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	412	0	11	584	47	11	11	11	47	0	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	631	0	-	412	0	0	888	1227	206	1004	-	316
Stage 1	-	-	-	-	-	-	574	574	-	630	-	-
Stage 2	-	-	-	-	-	-	314	653	-	374	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	947	-	0	1143	-	-	238	177	800	196	0	680
Stage 1	-	-	0	-	-	-	471	501	-	436	0	-
Stage 2	-	-	0	-	-	-	671	462	-	619	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	947	-	-	1143	-	-	209	159	800	170	-	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	209	159	-	170	-	-
Stage 1	-	-	-	-	-	-	430	458	-	399	-	-
Stage 2	-	-	-	-	-	-	627	455	-	545	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.1	22.1	24
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	243	947	-	1143	-	-	170	680
HCM Lane V/C Ratio	0.134	0.086	-	0.01	-	-	0.274	0.051
HCM Control Delay (s)	22.1	9.2	-	8.2	-	-	34	10.6
HCM Lane LOS	C	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.5	0.3	-	0	-	-	1.1	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	238	116	150	357	155	110
Future Volume (veh/h)	238	116	150	357	155	110
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	245	120	155	368	160	113
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	721	340	183	1922	362	322
Arrive On Green	0.31	0.31	0.10	0.54	0.20	0.20
Sat Flow, veh/h	2417	1097	1781	3647	1781	1585
Grp Volume(v), veh/h	185	180	155	368	160	113
Grp Sat Flow(s),veh/h/ln	1777	1643	1781	1777	1781	1585
Q Serve(g_s), s	2.5	2.6	2.7	1.7	2.5	1.9
Cycle Q Clear(g_c), s	2.5	2.6	2.7	1.7	2.5	1.9
Prop In Lane		0.67	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	552	510	183	1922	362	322
V/C Ratio(X)	0.34	0.35	0.85	0.19	0.44	0.35
Avail Cap(c_a), veh/h	1648	1524	1111	3296	2564	2281
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.3	8.3	13.8	3.7	10.9	10.7
Incr Delay (d2), s/veh	1.2	1.4	10.4	0.2	2.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.8	1.3	0.2	1.0	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.5	9.8	24.2	3.9	13.1	12.4
LnGrp LOS	A	A	C	A	B	B
Approach Vol, veh/h	365			523	273	
Approach Delay, s/veh	9.6			9.9	12.8	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.2	13.7				20.9	10.4
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	4.7	4.6				3.7	4.5
Green Ext Time (p_c), s	0.3	5.0				5.6	2.5

Intersection Summary	
HCM 6th Ctrl Delay	10.5
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	116	152	60	140	30	237	160	50	40	215	140
Future Volume (veh/h)	90	116	152	60	140	30	237	160	50	40	215	140
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	122	0	63	147	0	249	168	0	42	226	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	173	743		131	660		311	1102		93	667	
Arrive On Green	0.10	0.21	0.00	0.07	0.19	0.00	0.17	0.31	0.00	0.05	0.19	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	95	122	0	63	147	0	249	168	0	42	226	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.3	1.3	0.0	1.5	1.6	0.0	6.0	1.5	0.0	1.0	2.5	0.0
Cycle Q Clear(g_c), s	2.3	1.3	0.0	1.5	1.6	0.0	6.0	1.5	0.0	1.0	2.5	0.0
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	173	743		131	660		311	1102		93	667	
V/C Ratio(X)	0.55	0.16		0.48	0.22		0.80	0.15		0.45	0.34	
Avail Cap(c_a), veh/h	1047	3035		1442	3035		1442	3035		1047	3035	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.4	14.6	0.0	20.1	15.6	0.0	17.9	11.3	0.0	20.7	15.9	0.0
Incr Delay (d2), s/veh	2.7	0.3	0.0	2.7	0.4	0.0	4.8	0.2	0.0	3.4	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	1.0	0.5	0.0	0.7	0.6	0.0	2.5	0.5	0.0	0.5	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	14.9	0.0	22.8	16.0	0.0	22.6	11.4	0.0	24.1	16.7	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		217	A		210	A		417	A		268	A
Approach Delay, s/veh		18.1			18.1			18.1			17.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	18.0	7.3	13.4	11.9	12.5	8.4	12.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	3.5	3.5	3.3	8.0	4.5	4.3	3.6
Green Ext Time (p_c), s	0.1	2.2	0.1	1.5	0.7	3.0	0.2	1.9

Intersection Summary	
HCM 6th Ctrl Delay	18.0
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	760	878	203	750	0	1074	0	350	0	0	0
Future Volume (veh/h)	10	760	878	203	750	0	1074	0	350	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	776	0	207	765	0	1096	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	11	1220	546	248	2433	0	1265	0	564	0	2	0
Arrive On Green	0.01	0.35	0.00	0.14	0.48	0.00	0.36	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	776	0	207	765	0	1096	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.5	14.8	0.0	9.1	7.4	0.0	23.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	14.8	0.0	9.1	7.4	0.0	23.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	11	1220	546	248	2433	0	1265	0	564	0	2	0
V/C Ratio(X)	0.92	0.64	0.00	0.83	0.31	0.00	0.87	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	210	1585	709	331	2433	0	1324	0	591	0	220	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	39.5	21.7	0.0	33.3	12.5	0.0	23.7	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	105.4	1.2	0.0	12.8	0.2	0.0	6.8	0.0	0.0	0.0	0.0	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	0.5	7.3	0.0	5.3	3.4	0.0	12.3	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	144.9	22.9	0.0	46.1	12.7	0.0	30.5	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	C		D	B		C					
Approach Vol, veh/h		786			972			1096			0	
Approach Delay, s/veh		24.5			19.8			30.5			0.0	
Approach LOS		C			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.2	31.7		32.7	4.5	42.5		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	11.1	16.8		25.1	2.5	9.4		0.0
Green Ext Time (p_c), s	0.2	9.9		3.6	0.0	15.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	1054	30	181	760	40	20	10	150	130	10	60
Future Volume (veh/h)	90	1054	30	181	760	40	20	10	150	130	10	60
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	92	1076	29	185	776	18	20	10	17	133	10	13
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	106	1608	43	224	1851	828	27	32	54	160	93	121
Arrive On Green	0.06	0.46	0.46	0.13	0.53	0.53	0.02	0.05	0.05	0.09	0.13	0.13
Sat Flow, veh/h	1757	3487	94	1757	3505	1568	1757	609	1035	1757	725	943
Grp Volume(v), veh/h	92	541	564	185	776	18	20	0	27	133	0	23
Grp Sat Flow(s),veh/h/ln	1757	1752	1828	1757	1752	1568	1757	0	1644	1757	0	1668
Q Serve(g_s), s	3.1	14.4	14.4	6.1	8.0	0.3	0.7	0.0	0.9	4.4	0.0	0.7
Cycle Q Clear(g_c), s	3.1	14.4	14.4	6.1	8.0	0.3	0.7	0.0	0.9	4.4	0.0	0.7
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.63	1.00		0.57
Lane Grp Cap(c), veh/h	106	808	843	224	1851	828	27	0	86	160	0	214
V/C Ratio(X)	0.86	0.67	0.67	0.83	0.42	0.02	0.75	0.00	0.32	0.83	0.00	0.11
Avail Cap(c_a), veh/h	574	881	919	574	1851	828	574	0	688	515	0	615
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.8	12.5	12.5	25.4	8.5	6.7	29.3	0.0	27.3	26.7	0.0	23.0
Incr Delay (d2), s/veh	18.0	2.6	2.5	7.5	0.3	0.0	33.0	0.0	3.0	10.4	0.0	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	2.0	7.5	7.8	3.4	3.9	0.1	0.6	0.0	0.5	2.6	0.0	0.3
LnGrp Delay(d),s/veh	45.8	15.1	15.0	33.0	8.9	6.7	62.3	0.0	30.2	37.1	0.0	23.2
LnGrp LOS	D	B	B	C	A	A	E		C	D		C
Approach Vol, veh/h		1197			979			47			156	
Approach Delay, s/veh		17.4			13.4			43.9			35.0	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	31.5	9.4	7.1	7.6	35.5	4.9	11.6
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	8.1	16.4	6.4	2.9	5.1	10.0	2.7	2.7
Green Ext Time (p_c), s	0.4	11.2	0.2	0.2	0.2	17.3	0.0	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	860	110	300	450	130	100	60	254	110	40	40
Future Volume (veh/h)	60	860	110	300	450	130	100	60	254	110	40	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	61	878	104	306	459	119	102	61	99	112	41	4
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	70	1370	162	348	1636	421	121	179	151	135	193	164
Arrive On Green	0.04	0.43	0.43	0.20	0.59	0.59	0.07	0.10	0.10	0.08	0.10	0.10
Sat Flow, veh/h	1757	3156	374	1757	2760	711	1757	1845	1558	1757	1845	1563
Grp Volume(v), veh/h	61	487	495	306	290	288	102	61	99	112	41	4
Grp Sat Flow(s),veh/h/ln	1757	1752	1778	1757	1752	1718	1757	1845	1558	1757	1845	1563
Q Serve(g_s), s	2.8	18.0	18.0	13.9	6.7	6.8	4.7	2.5	5.0	5.2	1.7	0.2
Cycle Q Clear(g_c), s	2.8	18.0	18.0	13.9	6.7	6.8	4.7	2.5	5.0	5.2	1.7	0.2
Prop In Lane	1.00		0.21	1.00		0.41	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	70	760	771	348	1038	1018	121	179	151	135	193	164
V/C Ratio(X)	0.88	0.64	0.64	0.88	0.28	0.28	0.84	0.34	0.65	0.83	0.21	0.02
Avail Cap(c_a), veh/h	384	978	992	981	1616	1585	298	582	492	405	761	645
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	39.4	18.3	18.3	32.1	8.2	8.3	37.9	34.7	35.9	37.5	33.8	33.1
Incr Delay (d2), s/veh	26.9	1.3	1.3	7.2	0.2	0.2	14.2	1.1	4.7	12.4	0.5	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	1.9	8.9	9.1	7.4	3.3	3.3	2.8	1.4	2.4	3.0	0.9	0.1
LnGrp Delay(d),s/veh	66.2	19.6	19.6	39.2	8.4	8.5	52.1	35.9	40.6	49.9	34.3	33.2
LnGrp LOS	E	B	B	D	A	A	D	D	D	D	C	C
Approach Vol, veh/h		1043			884			262			157	
Approach Delay, s/veh		22.3			19.1			44.0			45.4	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.3	39.8	10.3	12.0	7.3	52.8	9.7	12.6
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	16.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	15.9	20.0	7.2	7.0	4.8	8.8	6.7	3.7
Green Ext Time (p_c), s	0.9	15.3	0.2	0.8	0.1	23.7	0.1	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	15	100	64	40	98	40	177	25	69	151	120
Future Volume (veh/h)	150	15	100	64	40	98	40	177	25	69	151	120
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	153	15	83	65	41	36	41	181	26	70	154	26
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	411	48	117	321	171	99	53	770	109	100	833	138
Arrive On Green	0.23	0.23	0.25	0.23	0.23	0.25	0.03	0.25	0.25	0.06	0.28	0.28
Sat Flow, veh/h	805	202	498	514	728	422	1757	3084	436	1757	3009	499
Grp Volume(v), veh/h	251	0	0	142	0	0	41	102	105	70	88	92
Grp Sat Flow(s),veh/h/ln	1506	0	0	1665	0	0	1757	1752	1768	1757	1752	1756
Q Serve(g_s), s	2.1	0.0	0.0	0.0	0.0	0.0	0.6	1.2	1.2	1.0	1.0	1.0
Cycle Q Clear(g_c), s	3.8	0.0	0.0	1.7	0.0	0.0	0.6	1.2	1.2	1.0	1.0	1.0
Prop In Lane	0.61		0.33	0.46		0.25	1.00		0.25	1.00		0.28
Lane Grp Cap(c), veh/h	575	0	0	592	0	0	53	438	441	100	485	486
V/C Ratio(X)	0.44	0.00	0.00	0.24	0.00	0.00	0.77	0.23	0.24	0.70	0.18	0.19
Avail Cap(c_a), veh/h	1182	0	0	1231	0	0	1174	2007	2025	1174	2007	2011
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.9	0.0	0.0	8.3	0.0	0.0	12.6	7.8	7.8	12.1	7.2	7.2
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.2	0.0	0.0	20.9	0.4	0.4	8.4	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	1.7	0.0	0.0	0.9	0.0	0.0	0.6	0.6	0.6	0.7	0.5	0.5
LnGrp Delay(d),s/veh	9.5	0.0	0.0	8.5	0.0	0.0	33.5	8.2	8.2	20.6	7.5	7.5
LnGrp LOS	A			A			C	A	A	C	A	A
Approach Vol, veh/h		251			142			248			250	
Approach Delay, s/veh		9.5			8.5			12.4			11.1	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.5	10.5		10.2	4.8	11.2		10.2
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.0	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	3.0	3.2		3.7	2.6	3.0		5.8
Green Ext Time (p_c), s	0.1	3.3		2.1	0.1	3.3		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.6
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	11	69	100	20	49	30	173	126	41	244	30
Future Vol, veh/h	20	11	69	100	20	49	30	173	126	41	244	30
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	20	11	70	102	20	50	31	177	129	42	249	31

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	510	714	140	516	665	155	280	0	0	305	0	0
Stage 1	348	348	-	302	302	-	-	-	-	-	-	-
Stage 2	162	366	-	214	363	-	-	-	-	-	-	-
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	444	353	879	440	377	860	1272	-	-	1245	-	-
Stage 1	638	630	-	680	660	-	-	-	-	-	-	-
Stage 2	821	619	-	765	621	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	382	333	879	377	355	858	1272	-	-	1243	-	-
Mov Cap-2 Maneuver	382	333	-	377	355	-	-	-	-	-	-	-
Stage 1	622	609	-	663	644	-	-	-	-	-	-	-
Stage 2	729	604	-	667	600	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.1	18.1	0.7	1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1272	-	-	610	446	1243	-	-
HCM Lane V/C Ratio	0.024	-	-	0.167	0.387	0.034	-	-
HCM Control Delay (s)	7.9	-	-	12.1	18.1	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.6	1.8	0.1	-	-



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	29	108	250	162	221	248	165
Future Volume (vph)	29	108	250	162	221	248	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	0.95	0.95		0.97	0.91
Frt		1.00	1.00	0.91		0.98	0.85
Flt Protected		0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)		1752	3505	3201		3363	1427
Flt Permitted		0.23	1.00	1.00		0.96	1.00
Satd. Flow (perm)		419	3505	3201		3363	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	110	255	165	226	253	168
RTOR Reduction (vph)	0	0	0	176	0	11	106
Lane Group Flow (vph)	0	140	255	215	0	279	25
Turn Type	custom	Prot	NA	NA		Perm	Perm
Protected Phases		1	6	2			
Permitted Phases	1					4	4
Actuated Green, G (s)		18.1	32.6	11.0		9.6	9.6
Effective Green, g (s)		17.6	32.6	11.0		9.6	9.6
Actuated g/C Ratio		0.35	0.65	0.22		0.19	0.19
Clearance Time (s)		3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)		146	2276	701		643	272
v/s Ratio Prot			0.07	c0.07			
v/s Ratio Perm		c0.33				c0.08	0.02
v/c Ratio		0.96	0.11	0.31		0.43	0.09
Uniform Delay, d1		15.9	3.3	16.4		17.9	16.7
Progression Factor		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		61.3	0.0	0.5		0.5	0.1
Delay (s)		77.3	3.4	16.9		18.4	16.9
Level of Service		E	A	B		B	B
Approach Delay (s)			29.6	16.9		17.9	
Approach LOS			C	B		B	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	50.2	Sum of lost time (s)	16.5
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

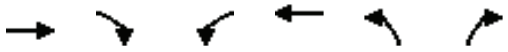
Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	333	60	0	534	30	145
Future Vol, veh/h	333	60	0	534	30	145
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	366	66	0	587	33	159

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	697	218
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	297	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	375	786
Stage 1	-	-	0	-	646	-
Stage 2	-	-	0	-	728	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	373	784
Mov Cap-2 Maneuver	-	-	-	-	373	-
Stage 1	-	-	-	-	645	-
Stage 2	-	-	-	-	725	-

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)	659	-	-	-
HCM Lane V/C Ratio	0.292	-	-	-
HCM Control Delay (s)	12.7	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.2	-	-	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	399	38	33	407	43	11
Future Volume (veh/h)	399	38	33	407	43	11
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	434	41	36	442	47	12
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1163	109	78	2031	91	23
Arrive On Green	0.36	0.36	0.04	0.58	0.07	0.07
Sat Flow, veh/h	3331	305	1757	3597	1345	343
Grp Volume(v), veh/h	234	241	36	442	60	0
Grp Sat Flow(s),veh/h/ln	1752	1791	1757	1752	1717	0
Q Serve(g_s), s	2.5	2.5	0.5	1.5	0.9	0.0
Cycle Q Clear(g_c), s	2.5	2.5	0.5	1.5	0.9	0.0
Prop In Lane		0.17	1.00		0.78	0.20
Lane Grp Cap(c), veh/h	629	643	78	2031	117	0
V/C Ratio(X)	0.37	0.37	0.46	0.22	0.51	0.00
Avail Cap(c_a), veh/h	1270	1298	379	3913	504	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.0	6.1	11.9	2.6	11.5	0.0
Incr Delay (d2), s/veh	0.4	0.4	4.3	0.1	3.5	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	1.2	1.3	0.3	0.8	0.5	0.0
LnGrp Delay(d),s/veh	6.4	6.4	16.2	2.6	15.0	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	475			478	60	
Approach Delay, s/veh	6.4			3.7	15.0	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.2	5.6	13.7				19.3
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		2.9	2.5	4.5				3.5
Green Ext Time (p_c), s		0.0	0.0	4.6				5.8

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	372	38	0	440	0	10
Future Vol, veh/h	372	38	0	440	0	10
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	404	41	0	478	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	664	223
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	239	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	392	777
Stage 1	-	-	0	-	624	-
Stage 2	-	-	0	-	775	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	392	777
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	624	-
Stage 2	-	-	-	-	775	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	777	-	-	-
HCM Lane V/C Ratio	0.014	-	-	-
HCM Control Delay (s)	9.7	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

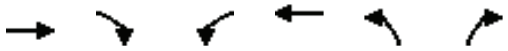
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	100	458	0	0	488	60	10	0	10	50	0	40
Future Vol, veh/h	100	458	0	0	488	60	10	0	10	50	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	96	96	92	92	92	96	92	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	477	0	0	508	63	11	0	11	52	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	571	0	-	477	0	0	939	1256	239	987	-	286
Stage 1	-	-	-	-	-	-	685	685	-	540	-	-
Stage 2	-	-	-	-	-	-	254	571	-	447	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	998	-	0	1082	-	-	219	170	762	202	0	711
Stage 1	-	-	0	-	-	-	404	447	-	494	0	-
Stage 2	-	-	0	-	-	-	728	503	-	560	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	998	-	-	1082	-	-	190	152	762	183	-	711
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	152	-	183	-	-
Stage 1	-	-	-	-	-	-	362	401	-	443	-	-
Stage 2	-	-	-	-	-	-	685	503	-	494	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	17.8	22.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	304	998	-	1082	-	-	183	711
HCM Lane V/C Ratio	0.072	0.104	-	-	-	-	0.285	0.059
HCM Control Delay (s)	17.8	9	-	0	-	-	32.3	10.4
HCM Lane LOS	C	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.2	0.3	-	0	-	-	1.1	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	330	138	170	400	178	200
Future Volume (veh/h)	330	138	170	400	178	200
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	340	142	175	412	184	206
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	801	328	215	1942	451	402
Arrive On Green	0.33	0.33	0.12	0.55	0.25	0.25
Sat Flow, veh/h	2550	1007	1781	3647	1781	1585
Grp Volume(v), veh/h	244	238	175	412	184	206
Grp Sat Flow(s),veh/h/ln	1777	1687	1781	1777	1781	1585
Q Serve(g_s), s	4.3	4.4	3.8	2.4	3.4	4.5
Cycle Q Clear(g_c), s	4.3	4.4	3.8	2.4	3.4	4.5
Prop In Lane		0.60	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	579	550	215	1942	451	402
V/C Ratio(X)	0.42	0.43	0.82	0.21	0.41	0.51
Avail Cap(c_a), veh/h	1288	1223	869	2577	2004	1783
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	10.5	10.6	17.2	4.7	12.4	12.8
Incr Delay (d2), s/veh	1.7	1.8	7.3	0.2	1.5	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	1.5	1.7	0.5	1.3	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.2	12.4	24.5	4.9	14.0	15.4
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	482			587	390	
Approach Delay, s/veh	12.3			10.7	14.8	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.8	17.0				25.9	14.1
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.8	6.4				4.4	6.5
Green Ext Time (p_c), s	0.4	6.5				6.2	3.8

Intersection Summary			
HCM 6th Ctrl Delay		12.3	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	168	212	50	134	40	266	200	70	40	264	160
Future Volume (veh/h)	130	168	212	50	134	40	266	200	70	40	264	160
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	134	173	0	52	138	0	274	206	0	41	272	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	802		111	633		337	1183		91	691	
Arrive On Green	0.11	0.23	0.00	0.06	0.18	0.00	0.19	0.33	0.00	0.05	0.19	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	134	173	0	52	138	0	274	206	0	41	272	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.5	1.9	0.0	1.4	1.6	0.0	7.2	2.0	0.0	1.1	3.3	0.0
Cycle Q Clear(g_c), s	3.5	1.9	0.0	1.4	1.6	0.0	7.2	2.0	0.0	1.1	3.3	0.0
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	196	802		111	633		337	1183		91	691	
V/C Ratio(X)	0.68	0.22		0.47	0.22		0.81	0.17		0.45	0.39	
Avail Cap(c_a), veh/h	968	2806		1333	2806		1333	2806		968	2806	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.9	15.4	0.0	22.1	17.1	0.0	18.9	11.5	0.0	22.5	17.1	0.0
Incr Delay (d2), s/veh	4.2	0.3	0.0	3.0	0.4	0.0	4.7	0.2	0.0	3.5	1.0	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	1.5	0.7	0.0	0.6	0.6	0.0	3.0	0.7	0.0	0.5	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.1	15.7	0.0	25.1	17.6	0.0	23.7	11.7	0.0	26.0	18.1	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		307	A		190	A		480	A		313	A
Approach Delay, s/veh		19.8			19.6			18.5			19.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	20.2	7.0	15.0	13.2	13.5	9.4	12.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	4.0	3.4	3.9	9.2	5.3	5.5	3.6
Green Ext Time (p_c), s	0.1	2.8	0.1	2.3	0.8	3.7	0.3	1.8

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	480	1195	253	580	0	1190	15	352	0	15	0
Future Volume (veh/h)	20	480	1195	253	580	0	1190	15	352	0	15	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	21	495	0	261	598	0	1238	0	0	0	15	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	30	963	431	297	2149	0	1248	0	557	0	21	0
Arrive On Green	0.02	0.27	0.00	0.17	0.43	0.00	0.36	0.00	0.00	0.00	0.01	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	21	495	0	261	598	0	1238	0	0	0	15	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	1.0	10.1	0.0	12.2	6.5	0.0	29.6	0.0	0.0	0.0	0.7	0.0
Cycle Q Clear(g_c), s	1.0	10.1	0.0	12.2	6.5	0.0	29.6	0.0	0.0	0.0	0.7	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	30	963	431	297	2149	0	1248	0	557	0	21	0
V/C Ratio(X)	0.70	0.51	0.00	0.88	0.28	0.00	0.99	0.00	0.00	0.00	0.70	0.00
Avail Cap(c_a), veh/h	198	1493	668	312	2149	0	1248	0	557	0	207	0
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	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	41.3	25.9	0.0	34.2	15.8	0.0	27.1	0.0	0.0	0.0	41.6	0.0
Incr Delay (d2), s/veh	25.3	0.9	0.0	22.9	0.1	0.0	23.6	0.0	0.0	0.0	33.6	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	0.7	5.0	0.0	7.8	3.0	0.0	18.4	0.0	0.0	0.0	0.5	0.0
LnGrp Delay(d),s/veh	66.6	26.8	0.0	57.2	15.9	0.0	50.7	0.0	0.0	0.0	75.2	0.0
LnGrp LOS	E	C		E	B		D				E	
Approach Vol, veh/h		516			859			1238			15	
Approach Delay, s/veh		28.4			28.4			50.7			75.2	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.3	27.2		34.0	5.4	40.1		5.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	35.0		30.0	10.0	35.0		10.0
Max Q Clear Time (g_c+I1), s	14.2	12.1		31.6	3.0	8.5		2.7
Green Ext Time (p_c), s	0.1	10.1		0.0	0.0	10.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	1250	60	364	1029	45	50	30	142	115	30	90
Future Volume (veh/h)	80	1250	60	364	1029	45	50	30	142	115	30	90
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	82	1289	59	375	1061	23	52	31	20	119	31	17
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	1388	63	411	2056	920	67	56	36	143	109	60
Arrive On Green	0.05	0.41	0.41	0.23	0.59	0.59	0.04	0.05	0.05	0.08	0.10	0.10
Sat Flow, veh/h	1757	3413	156	1757	3505	1568	1757	1049	677	1757	1121	615
Grp Volume(v), veh/h	82	661	687	375	1061	23	52	0	51	119	0	48
Grp Sat Flow(s),veh/h/ln	1757	1752	1817	1757	1752	1568	1757	0	1725	1757	0	1736
Q Serve(g_s), s	3.3	25.6	25.7	14.8	12.8	0.4	2.1	0.0	2.1	4.8	0.0	1.8
Cycle Q Clear(g_c), s	3.3	25.6	25.7	14.8	12.8	0.4	2.1	0.0	2.1	4.8	0.0	1.8
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.39	1.00		0.35
Lane Grp Cap(c), veh/h	95	713	739	411	2056	920	67	0	92	143	0	168
V/C Ratio(X)	0.86	0.93	0.93	0.91	0.52	0.03	0.78	0.00	0.55	0.83	0.00	0.29
Avail Cap(c_a), veh/h	480	737	764	480	2056	920	480	0	605	431	0	535
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.5	20.2	20.2	26.6	8.7	6.2	34.0	0.0	32.9	32.3	0.0	29.9
Incr Delay (d2), s/veh	19.3	18.4	18.2	19.8	0.4	0.0	17.3	0.0	7.2	11.7	0.0	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	2.1	15.9	16.5	9.4	6.2	0.2	1.3	0.0	1.2	2.8	0.0	0.9
LnGrp Delay(d),s/veh	52.7	38.6	38.4	46.3	9.2	6.2	51.3	0.0	40.1	44.0	0.0	30.9
LnGrp LOS	D	D	D	D	A	A	D		D	D		C
Approach Vol, veh/h		1430			1459			103			167	
Approach Delay, s/veh		39.3			18.7			45.8			40.2	
Approach LOS		D			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.7	33.0	9.8	7.8	7.9	45.9	6.7	10.9
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	20.0	30.0	18.0	25.0	20.0	30.0	20.0	22.0
Max Q Clear Time (g_c+I1), s	16.8	27.7	6.8	4.1	5.3	14.8	4.1	3.8
Green Ext Time (p_c), s	0.4	1.3	0.2	0.5	0.1	14.6	0.1	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.0
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	943	140	383	546	233	130	100	381	170	160	130
Future Volume (veh/h)	140	943	140	383	546	233	130	100	381	170	160	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	144	972	133	395	563	215	134	103	133	175	165	21
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	166	1190	163	426	1322	504	155	223	188	198	269	222
Arrive On Green	0.09	0.38	0.38	0.24	0.53	0.53	0.09	0.12	0.12	0.11	0.15	0.15
Sat Flow, veh/h	1757	3096	423	1757	2484	946	1757	1845	1552	1757	1845	1522
Grp Volume(v), veh/h	144	550	555	395	397	381	134	103	133	175	165	21
Grp Sat Flow(s),veh/h/ln	1757	1752	1767	1757	1752	1677	1757	1845	1552	1757	1845	1522
Q Serve(g_s), s	9.3	32.4	32.4	25.2	15.7	15.9	8.7	6.0	9.5	11.3	9.6	1.4
Cycle Q Clear(g_c), s	9.3	32.4	32.4	25.2	15.7	15.9	8.7	6.0	9.5	11.3	9.6	1.4
Prop In Lane	1.00		0.24	1.00		0.56	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	166	673	679	426	933	893	155	223	188	198	269	222
V/C Ratio(X)	0.87	0.82	0.82	0.93	0.43	0.43	0.87	0.46	0.71	0.88	0.61	0.09
Avail Cap(c_a), veh/h	275	702	707	703	1159	1109	214	417	351	291	546	450
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	51.3	31.7	31.8	42.5	16.2	16.3	51.7	47.0	48.6	50.2	46.0	42.5
Incr Delay (d2), s/veh	14.4	7.6	7.6	12.1	0.4	0.5	22.7	1.5	4.9	19.0	2.3	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	5.2	17.0	17.2	13.7	7.7	7.4	5.2	3.1	4.3	6.5	5.1	0.6
LnGrp Delay(d),s/veh	65.7	39.4	39.4	54.6	16.7	16.8	74.5	48.5	53.4	69.2	48.3	42.7
LnGrp LOS	E	D	D	D	B	B	E	D	D	E	D	D
Approach Vol, veh/h		1249			1173			370			361	
Approach Delay, s/veh		42.4			29.5			59.7			58.1	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	31.9	48.2	17.0	17.9	14.9	65.2	14.1	20.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	46.5	45.5	19.5	26.0	18.5	75.5	14.5	34.0
Max Q Clear Time (g_c+I1), s	27.2	34.4	13.3	11.5	11.3	17.9	10.7	11.6
Green Ext Time (p_c), s	1.2	9.2	0.2	1.8	0.2	30.7	0.1	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	41.4
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	47	120	91	70	136	60	213	29	115	208	180
Future Volume (veh/h)	200	47	120	91	70	136	60	213	29	115	208	180
Number	3	8	18	7	4	14	5	2	12	1	6	16
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		0.99	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	206	48	108	94	72	86	62	220	30	119	214	54
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	405	93	142	281	207	178	89	787	106	148	801	198
Arrive On Green	0.31	0.31	0.33	0.31	0.31	0.33	0.05	0.25	0.25	0.08	0.29	0.29
Sat Flow, veh/h	768	296	452	438	659	568	1757	3102	417	1757	2786	687
Grp Volume(v), veh/h	362	0	0	252	0	0	62	123	127	119	133	135
Grp Sat Flow(s),veh/h/ln	1516	0	0	1665	0	0	1757	1752	1767	1757	1752	1721
Q Serve(g_s), s	2.9	0.0	0.0	0.0	0.0	0.0	1.2	1.9	2.0	2.3	2.0	2.1
Cycle Q Clear(g_c), s	6.9	0.0	0.0	4.0	0.0	0.0	1.2	1.9	2.0	2.3	2.0	2.1
Prop In Lane	0.57		0.30	0.37		0.34	1.00		0.24	1.00		0.40
Lane Grp Cap(c), veh/h	640	0	0	666	0	0	89	445	449	148	504	495
V/C Ratio(X)	0.57	0.00	0.00	0.38	0.00	0.00	0.70	0.28	0.28	0.81	0.26	0.27
Avail Cap(c_a), veh/h	904	0	0	951	0	0	892	1525	1538	892	1525	1497
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.2	0.0	0.0	9.4	0.0	0.0	16.1	10.3	10.3	15.5	9.5	9.5
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.4	0.0	0.0	9.6	0.5	0.5	9.8	0.4	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	3.2	0.0	0.0	1.9	0.0	0.0	0.8	1.0	1.0	1.5	1.0	1.0
LnGrp Delay(d),s/veh	11.0	0.0	0.0	9.8	0.0	0.0	25.7	10.8	10.8	25.3	9.9	9.9
LnGrp LOS	B			A			C	B	B	C	A	A
Approach Vol, veh/h		362			252			312			387	
Approach Delay, s/veh		11.0			9.8			13.8			14.6	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	12.7		14.8	5.7	13.9		14.8
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	18.0	30.0		18.0	18.0	30.0		18.0
Max Q Clear Time (g_c+I1), s	4.3	4.0		6.0	3.2	4.1		8.9
Green Ext Time (p_c), s	0.2	4.5		3.3	0.1	4.5		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.5
HCM 2010 LOS	B

Notes

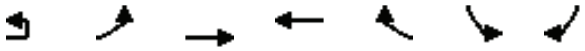
Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	17	89	105	16	73	60	199	198	68	281	70
Future Vol, veh/h	30	17	89	105	16	73	60	199	198	68	281	70
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	31	18	92	108	16	75	62	205	204	70	290	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	702	1001	182	728	935	208	362	0	0	411	0	0
Stage 1	466	466	-	433	433	-	-	-	-	-	-	-
Stage 2	236	535	-	295	502	-	-	-	-	-	-	-
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	323	240	826	309	262	795	1186	-	-	1137	-	-
Stage 1	543	558	-	569	578	-	-	-	-	-	-	-
Stage 2	743	520	-	686	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	253	213	825	235	233	793	1185	-	-	1136	-	-
Mov Cap-2 Maneuver	253	213	-	235	233	-	-	-	-	-	-	-
Stage 1	515	524	-	538	547	-	-	-	-	-	-	-
Stage 2	617	492	-	552	505	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	33.5	1.1	1.4
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1185	-	-	444	319	1136	-	-
HCM Lane V/C Ratio	0.052	-	-	0.316	0.627	0.062	-	-
HCM Control Delay (s)	8.2	-	-	16.8	33.5	8.4	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.3	4	0.2	-	-



Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	34	189	291	171	268	223	252
Future Volume (vph)	34	189	291	171	268	223	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes		1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00
Frt		1.00	1.00	0.91		0.95	0.85
Flt Protected		0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)		1752	3505	3184		3296	1427
Flt Permitted		0.23	1.00	1.00		0.97	1.00
Satd. Flow (perm)		417	3505	3184		3296	1427
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	35	195	300	176	276	230	260
RTOR Reduction (vph)	0	0	0	212	0	51	126
Lane Group Flow (vph)	0	230	300	240	0	283	30
Confl. Peds. (#/hr)						1	
Turn Type	custom	Prot	NA	NA		Perm	Perm
Protected Phases		1	6	2			
Permitted Phases	1					4	4
Actuated Green, G (s)		18.2	33.6	11.9		10.0	10.0
Effective Green, g (s)		17.7	33.6	11.9		10.0	10.0
Actuated g/C Ratio		0.34	0.65	0.23		0.19	0.19
Clearance Time (s)		3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)		143	2282	734		638	276
v/s Ratio Prot			0.09	c0.08			
v/s Ratio Perm		c0.55				c0.09	0.02
v/c Ratio		1.61	0.13	0.33		0.44	0.11
Uniform Delay, d1		17.0	3.4	16.5		18.3	17.1
Progression Factor		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2		303.8	0.1	0.5		0.5	0.2
Delay (s)		320.7	3.5	17.1		18.8	17.3
Level of Service		F	A	B		B	B
Approach Delay (s)			141.2	17.1		18.4	
Approach LOS			F	B		B	

Intersection Summary			
HCM 2000 Control Delay	62.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	51.6	Sum of lost time (s)	16.5
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	379	70	0	633	50	140
Future Vol, veh/h	379	70	0	633	50	140
Conflicting Peds, #/hr	0	2	2	0	4	3
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	391	72	0	653	52	144

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	759	236
Stage 1	-	-	-	-	429	-
Stage 2	-	-	-	-	330	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	343	766
Stage 1	-	-	0	-	624	-
Stage 2	-	-	0	-	701	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	341	762
Mov Cap-2 Maneuver	-	-	-	-	341	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	699	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	575	-	-	-
HCM Lane V/C Ratio	0.341	-	-	-
HCM Control Delay (s)	14.5	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	1.5	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	496	31	26	497	50	12
Future Volume (veh/h)	496	31	26	497	50	12
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	539	34	28	540	54	13
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1320	83	62	2085	101	24
Arrive On Green	0.39	0.39	0.04	0.59	0.07	0.07
Sat Flow, veh/h	3441	211	1757	3597	1365	329
Grp Volume(v), veh/h	282	291	28	540	68	0
Grp Sat Flow(s),veh/h/ln	1752	1807	1757	1752	1718	0
Q Serve(g_s), s	3.2	3.2	0.4	2.0	1.0	0.0
Cycle Q Clear(g_c), s	3.2	3.2	0.4	2.0	1.0	0.0
Prop In Lane		0.12	1.00		0.79	0.19
Lane Grp Cap(c), veh/h	691	712	62	2085	127	0
V/C Ratio(X)	0.41	0.41	0.45	0.26	0.54	0.00
Avail Cap(c_a), veh/h	1193	1231	356	3677	474	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	5.9	5.9	12.9	2.6	12.1	0.0
Incr Delay (d2), s/veh	0.4	0.4	5.2	0.1	3.5	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	1.6	1.6	0.3	0.9	0.6	0.0
LnGrp Delay(d),s/veh	6.3	6.3	18.0	2.7	15.6	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	573			568	68	
Approach Delay, s/veh	6.3			3.5	15.6	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.5	5.5	15.2				20.7
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		3.0	2.4	5.2				4.0
Green Ext Time (p_c), s		0.0	0.0	5.5				7.3

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	478	30	0	523	0	12
Future Vol, veh/h	478	30	0	523	0	12
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	520	33	0	568	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	820	276
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	284	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	311	718
Stage 1	-	-	0	-	548	-
Stage 2	-	-	0	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	311	718
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	548	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	718	-	-	-
HCM Lane V/C Ratio	0.018	-	-	-
HCM Control Delay (s)	10.1	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

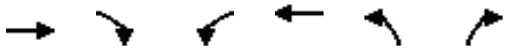
Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	416	0	10	533	70	10	10	10	50	0	40
Future Vol, veh/h	110	416	0	10	533	70	10	10	10	50	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	95	95	92	92	92	95	92	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	116	438	0	11	561	74	11	11	11	53	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	635	0	-	438	0	0	973	1327	219	1077	-	318
Stage 1	-	-	-	-	-	-	670	670	-	620	-	-
Stage 2	-	-	-	-	-	-	303	657	-	457	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	944	-	0	1118	-	-	207	154	785	173	0	678
Stage 1	-	-	0	-	-	-	413	454	-	442	0	-
Stage 2	-	-	0	-	-	-	681	460	-	553	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	944	-	-	1118	-	-	174	133	785	143	-	678
Mov Cap-2 Maneuver	-	-	-	-	-	-	174	133	-	143	-	-
Stage 1	-	-	-	-	-	-	362	398	-	388	-	-
Stage 2	-	-	-	-	-	-	629	453	-	465	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.1	25.7	29.3
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	206	944	-	1118	-	-	143	678
HCM Lane V/C Ratio	0.158	0.123	-	0.01	-	-	0.368	0.062
HCM Control Delay (s)	25.7	9.3	-	8.3	-	-	44.2	10.7
HCM Lane LOS	D	A	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.6	0.4	-	0	-	-	1.5	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	307	129	150	383	170	210
Future Volume (veh/h)	307	129	150	383	170	210
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	327	137	160	407	181	223
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	782	321	215	1877	478	425
Arrive On Green	0.32	0.32	0.12	0.53	0.27	0.27
Sat Flow, veh/h	2550	1009	1781	3647	1781	1585
Grp Volume(v), veh/h	235	229	160	407	181	223
Grp Sat Flow(s),veh/h/ln	1777	1689	1781	1777	1781	1585
Q Serve(g_s), s	4.1	4.2	3.4	2.4	3.3	4.7
Cycle Q Clear(g_c), s	4.1	4.2	3.4	2.4	3.3	4.7
Prop In Lane		0.60	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	565	537	215	1877	478	425
V/C Ratio(X)	0.42	0.43	0.74	0.22	0.38	0.52
Avail Cap(c_a), veh/h	1311	1246	906	2622	2039	1814
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	10.5	10.6	16.7	4.9	11.7	12.2
Incr Delay (d2), s/veh	1.7	1.8	5.0	0.2	1.3	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.4	1.4	0.5	1.2	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.2	12.4	21.7	5.2	13.0	14.8
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	464			567	404	
Approach Delay, s/veh	12.3			9.8	14.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.2	16.5				24.8	14.6
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.4	6.2				4.4	6.7
Green Ext Time (p_c), s	0.3	6.3				6.2	4.0

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	150	169	198	40	145	60	248	260	50	40	262	150
Future Volume (veh/h)	150	169	198	40	145	60	248	260	50	40	262	150
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	156	176	0	42	151	0	258	271	0	42	273	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	225	827		111	599		335	1115		111	668	
Arrive On Green	0.13	0.23	0.00	0.06	0.17	0.00	0.19	0.31	0.00	0.06	0.19	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	156	176	0	42	151	0	258	271	0	42	273	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.1	1.9	0.0	1.1	1.8	0.0	6.7	2.8	0.0	1.1	3.3	0.0
Cycle Q Clear(g_c), s	4.1	1.9	0.0	1.1	1.8	0.0	6.7	2.8	0.0	1.1	3.3	0.0
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	225	827		111	599		335	1115		111	668	
V/C Ratio(X)	0.69	0.21		0.38	0.25		0.77	0.24		0.38	0.41	
Avail Cap(c_a), veh/h	989	2777		1355	2777		1355	2777		989	2777	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.3	15.1	0.0	21.9	17.6	0.0	18.7	12.4	0.0	21.9	17.4	0.0
Incr Delay (d2), s/veh	3.8	0.3	0.0	2.1	0.6	0.0	3.8	0.3	0.0	2.1	1.0	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	1.7	0.7	0.0	0.5	0.7	0.0	2.7	0.9	0.0	0.5	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.1	15.4	0.0	24.0	18.1	0.0	22.5	12.7	0.0	24.0	18.4	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		332	A		193	A		529	A		315	A
Approach Delay, s/veh		19.5			19.4			17.5			19.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	19.8	6.5	15.8	12.6	13.6	9.6	12.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.1	4.8	3.1	3.9	8.7	5.3	6.1	3.8
Green Ext Time (p_c), s	0.1	3.7	0.1	2.3	0.7	3.7	0.4	1.9

Intersection Summary	
HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1090	470	50	1060	0	250	0	60	0	0	0
Future Volume (veh/h)	10	1090	470	50	1060	0	250	0	60	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	1112	0	51	1082	0	255	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	4	1833	820	92	2887	0	557	0	248	0	4	0
Arrive On Green	0.00	0.52	0.00	0.05	0.57	0.00	0.16	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	1112	0	51	1082	0	255	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.1	10.0	0.0	1.3	5.3	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	10.0	0.0	1.3	5.3	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	1833	820	92	2887	0	557	0	248	0	4	0
V/C Ratio(X)	2.56	0.61	0.00	0.55	0.37	0.00	0.46	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	175	2644	1183	585	4973	0	2885	0	1287	0	184	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	22.5	7.5	0.0	20.8	5.2	0.0	17.2	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	841.1	0.7	0.0	5.1	0.2	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	160.9	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	1.0	5.0	0.0	0.8	2.5	0.0	1.5	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	1024.5	8.2	0.0	26.0	5.4	0.0	18.5	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	A		C	A		B					
Approach Vol, veh/h		1122			1133			255			0	
Approach Delay, s/veh		17.3			6.3			18.5			0.0	
Approach LOS		B			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	27.6		11.1	4.1	29.8		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	33.0		37.0	5.0	43.5		5.0
Max Q Clear Time (g_c+I1), s	3.3	12.0		5.0	2.1	7.3		0.0
Green Ext Time (p_c), s	0.1	10.6		2.5	0.0	12.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	320	10	60	520	20	0	0	20	50	0	20
Future Volume (veh/h)	50	320	10	60	520	20	0	0	20	50	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	51	327	8	61	531	-2	0	0	-135	51	0	-35
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	70	1560	38	87	1596	714	7	0	377	70	0	505
Arrive On Green	0.04	0.45	0.45	0.05	0.46	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Sat Flow, veh/h	1757	3497	85	1757	3505	1568	1757	1845	0	1757	1845	0
Grp Volume(v), veh/h	51	164	171	61	531	-2	0	-135	-135	51	-35	-35
Grp Sat Flow(s),veh/h/ln	1757	1752	1830	1757	1752	1568	1757	1845	1568	1757	1845	1568
Q Serve(g_s), s	0.7	1.5	1.5	0.9	2.5	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Cycle Q Clear(g_c), s	0.7	1.5	1.5	0.9	2.5	0.0	0.0	0.0	0.0	0.7	0.0	0.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	70	782	816	87	1596	714	7	0	0	70	0	0
V/C Ratio(X)	0.73	0.21	0.21	0.70	0.33	0.00	0.00	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	885	2172	2268	1293	5158	2308	422	0	0	1021	0	0
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	0.00	0.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.3	4.4	4.4	12.1	4.5	0.0	0.0	0.0	0.0	12.3	0.0	0.0
Incr Delay (d2), s/veh	13.3	0.3	0.3	10.0	0.3	0.0	0.0	0.0	0.0	13.3	0.0	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	0.6	0.7	0.8	0.6	1.2	0.0	0.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	25.5	4.7	4.6	22.1	4.8	0.0	0.0	0.0	0.0	25.5	0.0	0.0
LnGrp LOS	C	A	A	C	A					C		
Approach Vol, veh/h		386			590			-270			-19	
Approach Delay, s/veh		7.4			6.6			0.0			-68.5	
Approach LOS		A			A			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	15.5	5.0	0.0	5.0	15.8	0.0	5.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	10.5	32.0	15.5	26.0	13.5	38.0	6.7	34.8
Max Q Clear Time (g_c+I1), s	2.9	3.5	2.7	0.0	2.7	4.5	0.0	0.0
Green Ext Time (p_c), s	0.1	3.8	0.1	0.0	0.1	7.2	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	150	30	180	220	150	10	20	140	90	20	30
Future Volume (veh/h)	40	150	30	180	220	150	10	20	140	90	20	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	41	153	20	184	224	63	10	20	21	92	20	8
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	56	683	88	228	860	236	6	118	100	127	256	217
Arrive On Green	0.03	0.22	0.20	0.13	0.32	0.30	0.00	0.06	0.06	0.07	0.14	0.14
Sat Flow, veh/h	1757	3122	402	1757	2717	746	1757	1845	1563	1757	1845	1566
Grp Volume(v), veh/h	41	85	88	184	143	144	10	20	21	92	20	8
Grp Sat Flow(s),veh/h/ln	1757	1752	1772	1757	1752	1711	1757	1845	1563	1757	1845	1566
Q Serve(g_s), s	0.7	1.2	1.3	3.2	1.9	2.0	0.1	0.3	0.4	1.6	0.3	0.1
Cycle Q Clear(g_c), s	0.7	1.2	1.3	3.2	1.9	2.0	0.1	0.3	0.4	1.6	0.3	0.1
Prop In Lane	1.00		0.23	1.00		0.44	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	383	388	228	555	542	6	118	100	127	256	217
V/C Ratio(X)	0.73	0.22	0.23	0.81	0.26	0.27	1.77	0.17	0.21	0.73	0.08	0.04
Avail Cap(c_a), veh/h	793	2259	2283	2774	4235	4135	1132	1843	1561	1245	1961	1665
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	14.9	10.0	10.0	13.1	7.9	8.0	15.5	13.7	13.8	14.1	11.6	11.6
Incr Delay (d2), s/veh	16.7	0.4	0.4	6.6	0.3	0.4	462.9	0.7	1.0	7.7	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	136.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.6	0.7	2.0	1.0	1.0	1.2	0.2	0.2	1.0	0.2	0.1
LnGrp Delay(d),s/veh	31.6	10.4	10.4	19.8	8.2	8.4	614.4	14.4	14.8	21.8	11.8	11.6
LnGrp LOS	C	B	B	B	A	A	F	B	B	C	B	B
Approach Vol, veh/h		214			471			51			120	
Approach Delay, s/veh		14.5			12.8			132.2			19.4	
Approach LOS		B			B			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	10.8	6.2	6.0	5.0	13.8	3.9	8.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	4.5	39.5	22.5	31.0	14.5	74.5	20.5	33.0
Max Q Clear Time (g_c+I1), s	5.2	3.3	3.6	2.4	2.7	4.0	2.1	2.3
Green Ext Time (p_c), s	0.5	1.4	0.2	0.1	0.0	2.6	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	10	20	0	20	30	130	10	10	140	70
Future Volume (veh/h)	20	0	10	20	0	20	30	130	10	10	140	70
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.96		1.00	0.96		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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	20	0	0	20	0	0	31	133	6	10	143	41
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	417	0	0	417	0	0	23	1195	54	9	877	244
Arrive On Green	0.02	0.00	0.00	0.02	0.00	0.00	0.01	0.35	0.35	0.00	0.32	0.32
Sat Flow, veh/h	1536	0	0	1536	0	0	1757	3417	153	1757	2710	753
Grp Volume(v), veh/h	20	0	0	20	0	0	31	68	71	10	91	93
Grp Sat Flow(s),veh/h/ln	1536	0	0	1536	0	0	1757	1752	1818	1757	1752	1710
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.5	0.1	0.7	0.7
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.2	0.0	0.0	0.2	0.5	0.5	0.1	0.7	0.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.08	1.00		0.44
Lane Grp Cap(c), veh/h	417	0	0	417	0	0	23	613	636	9	567	553
V/C Ratio(X)	0.05	0.00	0.00	0.05	0.00	0.00	1.36	0.11	0.11	1.06	0.16	0.17
Avail Cap(c_a), veh/h	2678	0	0	2678	0	0	584	2066	2143	1036	2517	2457
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	0.0	9.1	0.0	0.0	9.2	4.1	4.1	9.3	4.5	4.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	211.3	0.1	0.1	155.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	1.7	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.0	0.0	1.4	0.2	0.3	0.7	0.4	0.4
LnGrp Delay(d),s/veh	9.1	0.0	0.0	9.1	0.0	0.0	222.6	4.2	4.2	166.2	4.7	4.7
LnGrp LOS	A			A			F	A	A	F	A	A
Approach Vol, veh/h		20			20			170			194	
Approach Delay, s/veh		9.1			9.1			44.0			13.0	
Approach LOS		A			A			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.8	10.5		4.4	4.2	10.0		4.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	1.5	22.0		32.5	6.7	26.8		32.5
Max Q Clear Time (g_c+I1), s	2.1	2.5		2.2	2.2	2.7		2.2
Green Ext Time (p_c), s	0.0	0.9		0.1	0.0	1.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

Notes

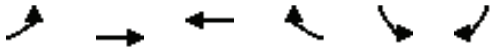
Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	110	0	100	10	70	180	90	60	20
Future Vol, veh/h	0	0	10	110	0	100	10	70	180	90	60	20
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	0	0	10	112	0	102	10	71	184	92	61	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	313	530	41	398	448	130	81	0	0	255	0	0
Stage 1	255	255	-	183	183	-	-	-	-	-	-	-
Stage 2	58	275	-	215	265	-	-	-	-	-	-	-
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	614	451	1018	534	502	892	1507	-	-	1300	-	-
Stage 1	724	693	-	798	745	-	-	-	-	-	-	-
Stage 2	944	679	-	764	686	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	511	416	1018	498	463	890	1507	-	-	1300	-	-
Mov Cap-2 Maneuver	511	416	-	498	463	-	-	-	-	-	-	-
Stage 1	719	644	-	792	740	-	-	-	-	-	-	-
Stage 2	829	674	-	703	637	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	13.6	0.3	4.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1507	-	-	1018	630	1300	-	-
HCM Lane V/C Ratio	0.007	-	-	0.01	0.34	0.071	-	-
HCM Control Delay (s)	7.4	-	-	8.6	13.6	8	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	1.5	0.2	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	120	60	80	140	90	90
Future Volume (vph)	120	60	80	140	90	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.90		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3171		3313	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3171		3313	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	122	61	82	143	92	92
RTOR Reduction (vph)	0	0	95	0	29	49
Lane Group Flow (vph)	122	61	130	0	97	9
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	5.0	19.6	11.1		5.3	5.3
Effective Green, g (s)	4.5	19.6	11.1		5.3	5.3
Actuated g/C Ratio	0.14	0.60	0.34		0.16	0.16
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	239	2088	1069		533	229
v/s Ratio Prot	c0.07	0.02	c0.04			
v/s Ratio Perm					c0.03	0.01
v/c Ratio	0.51	0.03	0.12		0.18	0.04
Uniform Delay, d1	13.2	2.7	7.5		11.9	11.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.8	0.0	0.1		0.2	0.1
Delay (s)	15.0	2.7	7.6		12.1	11.7
Level of Service	B	A	A		B	B
Approach Delay (s)		10.9	7.6		12.0	
Approach LOS		B	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	32.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	28.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	160	40	0	200	35	85
Future Vol, veh/h	160	40	0	200	35	85
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	176	44	0	220	38	93

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	313	112
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	114	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	655	920
Stage 1	-	-	0	-	815	-
Stage 2	-	-	0	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	652	918
Mov Cap-2 Maneuver	-	-	-	-	652	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	820	-	-	-
HCM Lane V/C Ratio	0.161	-	-	-
HCM Control Delay (s)	10.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.6	-	-	-

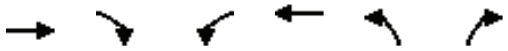
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	170	0	10	410	30	10	0	0	20	0	40
Future Vol, veh/h	30	170	0	10	410	30	10	0	0	20	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	198	0	11	477	35	11	0	0	23	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	512	0	-	198	0	0	529	802	99	686	-	256
Stage 1	-	-	-	-	-	-	268	268	-	517	-	-
Stage 2	-	-	-	-	-	-	261	534	-	169	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1050	-	0	1372	-	-	433	316	937	334	0	743
Stage 1	-	-	0	-	-	-	714	686	-	509	0	-
Stage 2	-	-	0	-	-	-	721	523	-	816	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1050	-	-	1372	-	-	392	302	937	323	-	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	392	302	-	323	-	-
Stage 1	-	-	-	-	-	-	690	663	-	492	-	-
Stage 2	-	-	-	-	-	-	668	517	-	789	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.2	14.4	12.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	392	1050	-	1372	-	-	323	743
HCM Lane V/C Ratio	0.028	0.033	-	0.008	-	-	0.072	0.063
HCM Control Delay (s)	14.4	8.5	-	7.6	-	-	17	10.2
HCM Lane LOS	B	A	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0.1	-	0	-	-	0.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	140	50	90	270	60	70
Future Volume (veh/h)	140	50	90	270	60	70
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	154	55	99	297	66	77
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	699	241	141	1803	313	278
Arrive On Green	0.27	0.27	0.08	0.51	0.18	0.18
Sat Flow, veh/h	2687	893	1781	3647	1781	1585
Grp Volume(v), veh/h	104	105	99	297	66	77
Grp Sat Flow(s),veh/h/ln	1777	1710	1781	1777	1781	1585
Q Serve(g_s), s	1.1	1.2	1.4	1.1	0.8	1.1
Cycle Q Clear(g_c), s	1.1	1.2	1.4	1.1	0.8	1.1
Prop In Lane		0.52	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	479	461	141	1803	313	278
V/C Ratio(X)	0.22	0.23	0.70	0.16	0.21	0.28
Avail Cap(c_a), veh/h	2042	1965	1377	4085	3177	2827
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.2	7.2	11.3	3.3	8.9	9.0
Incr Delay (d2), s/veh	0.8	0.9	6.2	0.2	0.9	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.3	0.6	0.1	0.3	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.9	8.0	17.5	3.5	9.8	10.4
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	209			396	143	
Approach Delay, s/veh	8.0			7.0	10.1	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	6.0	10.8				16.8	8.4
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	3.4	3.2				3.1	3.1
Green Ext Time (p_c), s	0.2	2.7				4.4	1.3

Intersection Summary			
HCM 6th Ctrl Delay		7.9	
HCM 6th LOS		A	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	80	80	50	170	30	130	100	30	10	100	70
Future Volume (veh/h)	50	80	80	50	170	30	130	100	30	10	100	70
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	88	0	55	187	0	143	110	0	11	110	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	743		120	743		225	1129		14	707	
Arrive On Green	0.07	0.21	0.00	0.07	0.21	0.00	0.13	0.32	0.00	0.01	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	55	88	0	55	187	0	143	110	0	11	110	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.2	0.8	0.0	1.2	1.8	0.0	3.1	0.9	0.0	0.2	1.0	0.0
Cycle Q Clear(g_c), s	1.2	0.8	0.0	1.2	1.8	0.0	3.1	0.9	0.0	0.2	1.0	0.0
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	120	743		120	743		225	1129		14	707	
V/C Ratio(X)	0.46	0.12		0.46	0.25		0.63	0.10		0.80	0.16	
Avail Cap(c_a), veh/h	1174	3404		1618	3404		1618	3404		1174	3404	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.0	12.9	0.0	18.0	13.3	0.0	16.7	9.7	0.0	19.9	13.3	0.0
Incr Delay (d2), s/veh	2.7	0.2	0.0	2.7	0.5	0.0	3.0	0.1	0.0	66.3	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	0.5	0.3	0.0	0.5	0.6	0.0	1.2	0.3	0.0	0.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	13.1	0.0	20.7	13.7	0.0	19.6	9.8	0.0	86.2	13.6	0.0
LnGrp LOS	C	B		C	B		B	A		F	B	
Approach Vol, veh/h		143	A		242	A		253	A		121	A
Approach Delay, s/veh		16.0			15.3			15.3			20.2	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	16.8	6.7	12.4	9.1	12.0	6.7	12.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	12.2	2.9	3.2	2.8	5.1	3.0	3.2	3.8
Green Ext Time (p_c), s	0.0	1.4	0.1	1.0	0.4	1.3	0.1	2.5

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	550	1060	200	610	0	1000	10	280	0	0	0
Future Volume (veh/h)	10	550	1060	200	610	0	1000	10	280	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	556	0	202	616	0	1017	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	10	1019	434	249	2148	0	1422	0	635	0	3	0
Arrive On Green	0.01	0.29	0.00	0.14	0.43	0.00	0.40	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	556	0	202	616	0	1017	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.4	9.9	0.0	8.2	5.9	0.0	17.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	9.9	0.0	8.2	5.9	0.0	17.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	10	1019	434	249	2148	0	1422	0	635	0	3	0
V/C Ratio(X)	0.99	0.55	0.00	0.81	0.29	0.00	0.71	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	107	1332	575	429	2836	0	1908	0	851	0	113	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	36.6	22.0	0.0	30.7	13.8	0.0	18.4	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	127.3	1.0	0.0	6.3	0.2	0.0	1.6	0.0	0.0	0.0	0.0	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	0.6	4.8	0.0	4.4	2.8	0.0	8.9	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	163.9	23.0	0.0	36.9	14.0	0.0	19.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	C		D	B		B					
Approach Vol, veh/h		566			818			1017			0	
Approach Delay, s/veh		25.5			19.6			19.9			0.0	
Approach LOS		C			B			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	25.4		33.8	4.4	35.4		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	18.0	27.0		40.0	5.0	40.5		5.0
Max Q Clear Time (g_c+I1), s	10.2	11.9		19.9	2.4	7.9		0.0
Green Ext Time (p_c), s	0.4	8.5		10.0	0.0	13.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.1
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	930	50	190	890	40	30	10	160	160	10	130
Future Volume (veh/h)	100	930	50	190	890	40	30	10	160	160	10	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	101	939	48	192	899	24	30	10	49	162	10	52
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	118	1565	80	228	1836	821	43	17	83	194	38	199
Arrive On Green	0.07	0.46	0.46	0.13	0.52	0.52	0.02	0.06	0.06	0.11	0.15	0.15
Sat Flow, veh/h	1757	3393	173	1757	3505	1566	1757	272	1332	1757	259	1345
Grp Volume(v), veh/h	101	485	502	192	899	24	30	0	59	162	0	62
Grp Sat Flow(s),veh/h/ln	1757	1752	1814	1757	1752	1566	1757	0	1604	1757	0	1604
Q Serve(g_s), s	3.9	14.0	14.0	7.2	11.1	0.5	1.1	0.0	2.4	6.1	0.0	2.3
Cycle Q Clear(g_c), s	3.9	14.0	14.0	7.2	11.1	0.5	1.1	0.0	2.4	6.1	0.0	2.3
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.83	1.00		0.84
Lane Grp Cap(c), veh/h	118	808	837	228	1836	821	43	0	100	194	0	238
V/C Ratio(X)	0.85	0.60	0.60	0.84	0.49	0.03	0.70	0.00	0.59	0.84	0.00	0.26
Avail Cap(c_a), veh/h	280	864	894	451	2069	925	156	0	616	394	0	833
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.3	13.6	13.6	28.8	10.3	7.8	32.8	0.0	30.9	29.5	0.0	25.6
Incr Delay (d2), s/veh	15.6	1.7	1.7	8.1	0.4	0.0	18.4	0.0	7.6	9.2	0.0	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	2.4	7.1	7.4	4.0	5.5	0.2	0.8	0.0	1.3	3.5	0.0	1.1
LnGrp Delay(d),s/veh	46.9	15.3	15.3	36.9	10.8	7.8	51.2	0.0	38.5	38.7	0.0	26.1
LnGrp LOS	D	B	B	D	B	A	D		D	D		C
Approach Vol, veh/h		1088			1115			89			224	
Approach Delay, s/veh		18.2			15.2			42.8			35.2	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	35.3	11.5	8.2	8.6	39.5	5.7	14.0
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	17.3	33.4	15.7	26.0	11.3	40.0	6.5	35.2
Max Q Clear Time (g_c+I1), s	9.2	16.0	8.1	4.4	5.9	13.1	3.1	4.3
Green Ext Time (p_c), s	0.3	15.3	0.2	0.7	0.1	22.4	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	19.3
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	440	110	500	350	180	100	70	500	130	70	70
Future Volume (veh/h)	80	440	110	500	350	180	100	70	500	130	70	70
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	81	444	96	505	354	142	101	71	150	131	71	22
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	769	165	553	1299	513	120	246	209	157	285	241
Arrive On Green	0.05	0.27	0.26	0.31	0.53	0.52	0.07	0.13	0.13	0.09	0.15	0.15
Sat Flow, veh/h	1757	2872	617	1757	2456	970	1757	1845	1564	1757	1845	1562
Grp Volume(v), veh/h	81	270	270	505	251	245	101	71	150	131	71	22
Grp Sat Flow(s),veh/h/ln	1757	1752	1736	1757	1752	1674	1757	1845	1564	1757	1845	1562
Q Serve(g_s), s	3.8	11.0	11.1	22.8	6.5	6.7	4.7	2.9	7.6	6.0	2.8	1.0
Cycle Q Clear(g_c), s	3.8	11.0	11.1	22.8	6.5	6.7	4.7	2.9	7.6	6.0	2.8	1.0
Prop In Lane	1.00		0.36	1.00		0.58	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	469	465	553	927	885	120	246	209	157	285	241
V/C Ratio(X)	0.86	0.57	0.58	0.91	0.27	0.28	0.84	0.29	0.72	0.83	0.25	0.09
Avail Cap(c_a), veh/h	277	702	696	1174	1596	1524	341	784	665	405	851	721
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	38.6	26.1	26.2	27.1	10.7	10.8	37.9	32.1	34.2	36.9	30.6	29.9
Incr Delay (d2), s/veh	18.9	1.6	1.6	6.4	0.2	0.2	14.0	0.6	4.6	10.9	0.5	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	2.3	5.5	5.5	11.9	3.2	3.1	2.7	1.5	3.5	3.4	1.5	0.4
LnGrp Delay(d),s/veh	57.6	27.7	27.9	33.5	10.9	11.0	51.9	32.8	38.8	47.8	31.1	30.0
LnGrp LOS	E	C	C	C	B	B	D	C	D	D	C	C
Approach Vol, veh/h		621			1001			322			224	
Approach Delay, s/veh		31.6			22.3			41.6			40.7	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.9	26.1	11.4	15.0	8.4	47.5	9.6	16.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	55.5	32.5	19.5	35.0	13.5	74.5	16.5	38.0
Max Q Clear Time (g_c+I1), s	24.8	13.1	8.0	9.6	5.8	8.7	6.7	4.8
Green Ext Time (p_c), s	1.7	8.4	0.2	1.3	0.1	12.1	0.1	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	50	100	160	40	280	30	250	50	170	260	130
Future Volume (veh/h)	140	50	100	160	40	280	30	250	50	170	260	130
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	141	51	81	162	40	231	30	253	25	172	263	64
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	359	137	155	299	92	314	41	723	71	206	892	213
Arrive On Green	0.38	0.38	0.39	0.38	0.38	0.39	0.02	0.22	0.22	0.12	0.32	0.32
Sat Flow, veh/h	611	364	411	484	243	832	1757	3224	316	1757	2806	670
Grp Volume(v), veh/h	273	0	0	433	0	0	30	137	141	172	162	165
Grp Sat Flow(s),veh/h/ln	1386	0	0	1559	0	0	1757	1752	1787	1757	1752	1724
Q Serve(g_s), s	0.0	0.0	0.0	3.5	0.0	0.0	0.7	2.8	2.8	4.1	3.0	3.1
Cycle Q Clear(g_c), s	6.0	0.0	0.0	9.5	0.0	0.0	0.7	2.8	2.8	4.1	3.0	3.1
Prop In Lane	0.52		0.30	0.37		0.53	1.00		0.18	1.00		0.39
Lane Grp Cap(c), veh/h	651	0	0	704	0	0	41	393	401	206	557	548
V/C Ratio(X)	0.42	0.00	0.00	0.61	0.00	0.00	0.73	0.35	0.35	0.84	0.29	0.30
Avail Cap(c_a), veh/h	1109	0	0	1209	0	0	190	904	922	494	1208	1189
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.9	0.0	0.0	11.0	0.0	0.0	20.7	13.9	13.9	18.4	10.9	11.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.9	0.0	0.0	21.9	0.7	0.8	8.6	0.4	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	2.5	0.0	0.0	4.4	0.0	0.0	0.6	1.4	1.5	2.5	1.5	1.5
LnGrp Delay(d),s/veh	10.4	0.0	0.0	11.8	0.0	0.0	42.6	14.7	14.7	27.1	11.3	11.4
LnGrp LOS	B			B			D	B	B	C	B	B
Approach Vol, veh/h		273			433			308			499	
Approach Delay, s/veh		10.4			11.8			17.4			16.8	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	13.6		20.1	5.0	17.6		20.1
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	12.5	22.0		31.5	5.1	29.4		31.5
Max Q Clear Time (g_c+I1), s	6.1	4.8		11.5	2.7	5.1		8.0
Green Ext Time (p_c), s	0.2	4.6		5.0	0.0	5.3		5.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	110.3

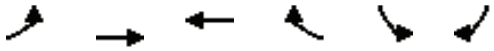
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	30	60	240	20	150	50	150	360	130	330	60
Future Vol, veh/h	30	30	60	240	20	150	50	150	360	130	330	60
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	30	61	242	20	152	51	152	364	131	333	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	816	1246	202	881	1095	259	397	0	0	516	0	0
Stage 1	629	629	-	435	435	-	-	-	-	-	-	-
Stage 2	187	617	-	446	660	-	-	-	-	-	-	-
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	267	171	802	~ 239	211	737	1151	-	-	1039	-	-
Stage 1	434	471	-	567	576	-	-	-	-	-	-	-
Stage 2	794	477	-	559	456	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	169	142	798	~ 162	176	736	1149	-	-	1039	-	-
Mov Cap-2 Maneuver	169	142	-	~ 162	176	-	-	-	-	-	-	-
Stage 1	414	410	-	541	550	-	-	-	-	-	-	-
Stage 2	580	455	-	417	397	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.6	$ 420.5	0.7	2.2
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1149	-	-	259	228	1039	-	-
HCM Lane V/C Ratio	0.044	-	-	0.468	1.816	0.126	-	-
HCM Control Delay (s)	8.3	-	-	30.6	$ 420.5	9	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.3	28.7	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	280	90	120	280	300	330
Future Volume (vph)	280	90	120	280	300	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.89		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3108		3300	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3108		3300	1427
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	283	91	121	283	303	333
RTOR Reduction (vph)	0	0	217	0	47	151
Lane Group Flow (vph)	283	91	187	0	389	49
Confl. Peds. (#/hr)				2		
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	11.6	25.5	10.4		10.9	10.9
Effective Green, g (s)	11.1	25.5	10.4		10.9	10.9
Actuated g/C Ratio	0.25	0.57	0.23		0.25	0.25
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	438	2013	728		810	350
v/s Ratio Prot	c0.16	0.03	c0.06			
v/s Ratio Perm					c0.12	0.03
v/c Ratio	0.65	0.05	0.26		0.48	0.14
Uniform Delay, d1	14.9	4.1	13.9		14.3	13.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.3	0.0	0.4		0.5	0.2
Delay (s)	18.2	4.1	14.2		14.8	13.3
Level of Service	B	A	B		B	B
Approach Delay (s)		14.7	14.2		14.3	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	44.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	420	60	0	540	50	125
Future Vol, veh/h	420	60	0	540	50	125
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	462	66	0	593	55	137

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	797	266
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	301	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	324	732
Stage 1	-	-	0	-	577	-
Stage 2	-	-	0	-	725	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	322	730
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	722	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	536	-	-	-
HCM Lane V/C Ratio	0.359	-	-	-
HCM Control Delay (s)	15.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.6	-	-	-

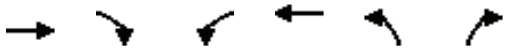
Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	360	0	10	390	50	10	10	10	40	0	40
Future Vol, veh/h	80	360	0	10	390	50	10	10	10	40	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	419	0	11	453	58	11	11	11	47	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	511	0	-	419	0	0	854	1138	210	905	-	256
Stage 1	-	-	-	-	-	-	605	605	-	504	-	-
Stage 2	-	-	-	-	-	-	249	533	-	401	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1050	-	0	1137	-	-	252	200	796	232	0	743
Stage 1	-	-	0	-	-	-	451	486	-	518	0	-
Stage 2	-	-	0	-	-	-	733	523	-	597	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1050	-	-	1137	-	-	218	180	796	202	-	743
Mov Cap-2 Maneuver	-	-	-	-	-	-	218	180	-	202	-	-
Stage 1	-	-	-	-	-	-	411	443	-	472	-	-
Stage 2	-	-	-	-	-	-	677	516	-	524	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.2	20.6	19.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	263	1050	-	1137	-	-	202	743
HCM Lane V/C Ratio	0.124	0.089	-	0.01	-	-	0.23	0.063
HCM Control Delay (s)	20.6	8.8	-	8.2	-	-	28.1	10.2
HCM Lane LOS	C	A	-	A	-	-	D	B
HCM 95th %tile Q(veh)	0.4	0.3	-	0	-	-	0.9	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	240	130	170	260	140	130
Future Volume (veh/h)	240	130	170	260	140	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	247	134	175	268	144	134
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	701	366	212	1973	353	315
Arrive On Green	0.31	0.31	0.12	0.56	0.20	0.20
Sat Flow, veh/h	2331	1168	1781	3647	1781	1585
Grp Volume(v), veh/h	194	187	175	268	144	134
Grp Sat Flow(s),veh/h/ln	1777	1628	1781	1777	1781	1585
Q Serve(g_s), s	2.7	2.9	3.1	1.2	2.3	2.4
Cycle Q Clear(g_c), s	2.7	2.9	3.1	1.2	2.3	2.4
Prop In Lane		0.72	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	556	510	212	1973	353	315
V/C Ratio(X)	0.35	0.37	0.83	0.14	0.41	0.43
Avail Cap(c_a), veh/h	1586	1453	1069	3172	2467	2195
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	8.6	8.7	14.0	3.5	11.4	11.4
Incr Delay (d2), s/veh	1.3	1.5	7.9	0.1	2.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.9	1.4	0.2	0.9	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.9	10.2	21.8	3.6	13.3	13.8
LnGrp LOS	A	B	C	A	B	B
Approach Vol, veh/h	381			443	278	
Approach Delay, s/veh	10.0			10.8	13.5	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	7.9	14.2				22.0	10.4
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.1	4.9				3.2	4.4
Green Ext Time (p_c), s	0.4	5.2				3.9	2.6

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	130	140	60	140	40	140	180	50	50	260	170
Future Volume (veh/h)	100	130	140	60	140	40	140	180	50	50	260	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	137	0	63	147	0	147	189	0	53	274	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	794		132	687		218	953		115	748	
Arrive On Green	0.10	0.22	0.00	0.07	0.19	0.00	0.12	0.27	0.00	0.06	0.21	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	105	137	0	63	147	0	147	189	0	53	274	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.4	1.3	0.0	1.5	1.5	0.0	3.4	1.8	0.0	1.2	2.9	0.0
Cycle Q Clear(g_c), s	2.4	1.3	0.0	1.5	1.5	0.0	3.4	1.8	0.0	1.2	2.9	0.0
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	186	794		132	687		218	953		115	748	
V/C Ratio(X)	0.56	0.17		0.48	0.21		0.67	0.20		0.46	0.37	
Avail Cap(c_a), veh/h	1090	3158		1501	3158		1501	3158		1090	3158	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.5	13.6	0.0	19.2	14.7	0.0	18.2	12.2	0.0	19.5	14.6	0.0
Incr Delay (d2), s/veh	2.7	0.3	0.0	2.6	0.4	0.0	3.6	0.3	0.0	2.8	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	1.0	0.5	0.0	0.6	0.5	0.0	1.4	0.6	0.0	0.5	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	13.9	0.0	21.9	15.1	0.0	21.8	12.5	0.0	22.4	15.4	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		242	A		210	A		336	A		327	A
Approach Delay, s/veh		17.0			17.1			16.6			16.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	15.6	7.2	13.7	9.3	13.1	8.5	12.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.2	3.8	3.5	3.3	5.4	4.9	4.4	3.5
Green Ext Time (p_c), s	0.1	2.5	0.1	1.7	0.4	3.8	0.2	1.9

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	880	1050	220	870	0	1060	0	330	0	0	0
Future Volume (veh/h)	10	880	1050	220	870	0	1060	0	330	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	898	0	224	888	0	1082	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	12	1228	550	259	2473	0	1301	0	580	0	2	0
Arrive On Green	0.01	0.35	0.00	0.15	0.49	0.00	0.37	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	898	0	224	888	0	1082	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.5	20.4	0.0	11.3	9.9	0.0	25.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	20.4	0.0	11.3	9.9	0.0	25.5	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	12	1228	550	259	2473	0	1301	0	580	0	2	0
V/C Ratio(X)	0.84	0.73	0.00	0.86	0.36	0.00	0.83	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	87	1309	586	290	2473	0	1428	0	637	0	91	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	45.2	25.8	0.0	37.9	14.3	0.0	26.1	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	80.7	2.6	0.0	21.3	0.2	0.0	4.8	0.0	0.0	0.0	0.0	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	0.5	10.3	0.0	7.0	4.6	0.0	13.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	125.9	28.4	0.0	59.2	14.5	0.0	30.8	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	C		E	B		C					
Approach Vol, veh/h		908			1112			1082			0	
Approach Delay, s/veh		29.5			23.5			30.8			0.0	
Approach LOS		C			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.4	35.9		37.7	4.6	48.7		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	15.0	33.0		37.0	5.0	43.5		5.0
Max Q Clear Time (g_c+I1), s	13.3	22.4		27.5	2.5	11.9		0.0
Green Ext Time (p_c), s	0.1	8.5		6.2	0.0	20.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1020	30	210	950	40	30	10	170	150	10	70
Future Volume (veh/h)	100	1020	30	210	950	40	30	10	170	150	10	70
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.98	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	102	1041	29	214	969	19	31	10	18	153	10	16
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	120	1601	45	253	1878	840	44	31	55	183	84	134
Arrive On Green	0.07	0.46	0.46	0.14	0.54	0.54	0.03	0.05	0.05	0.10	0.13	0.13
Sat Flow, veh/h	1757	3483	97	1757	3505	1568	1757	585	1053	1757	636	1018
Grp Volume(v), veh/h	102	524	546	214	969	19	31	0	28	153	0	26
Grp Sat Flow(s),veh/h/ln	1757	1752	1828	1757	1752	1568	1757	0	1638	1757	0	1654
Q Serve(g_s), s	3.8	15.4	15.4	7.9	11.9	0.4	1.2	0.0	1.1	5.7	0.0	0.9
Cycle Q Clear(g_c), s	3.8	15.4	15.4	7.9	11.9	0.4	1.2	0.0	1.1	5.7	0.0	0.9
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.64	1.00		0.62
Lane Grp Cap(c), veh/h	120	806	840	253	1878	840	44	0	86	183	0	218
V/C Ratio(X)	0.85	0.65	0.65	0.84	0.52	0.02	0.70	0.00	0.32	0.83	0.00	0.12
Avail Cap(c_a), veh/h	341	838	874	499	1990	890	163	0	636	394	0	860
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.8	13.9	13.9	27.9	10.0	7.3	32.4	0.0	30.6	29.4	0.0	25.6
Incr Delay (d2), s/veh	15.1	2.4	2.3	7.5	0.5	0.0	18.0	0.0	3.1	9.5	0.0	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	2.4	8.0	8.3	4.4	5.8	0.2	0.8	0.0	0.6	3.2	0.0	0.4
LnGrp Delay(d),s/veh	45.9	16.4	16.3	35.5	10.4	7.3	50.3	0.0	33.6	38.9	0.0	25.9
LnGrp LOS	D	B	B	D	B	A	D		C	D		C
Approach Vol, veh/h		1172			1202			59			179	
Approach Delay, s/veh		18.9			14.8			42.4			37.0	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.7	34.8	11.0	7.5	8.6	39.9	5.7	12.8
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	10.5	32.0	15.5	26.0	13.5	38.0	6.7	34.8
Max Q Clear Time (g_c+I1), s	9.9	17.4	7.7	3.1	5.8	13.9	3.2	2.9
Green Ext Time (p_c), s	0.4	13.4	0.2	0.3	0.1	21.2	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	540	130	510	380	150	120	60	490	130	50	40
Future Volume (veh/h)	70	540	130	510	380	150	120	60	490	130	50	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	71	551	120	520	388	127	122	61	204	133	51	4
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	84	818	178	556	1445	467	144	292	247	157	305	258
Arrive On Green	0.05	0.29	0.28	0.32	0.55	0.55	0.08	0.16	0.16	0.09	0.17	0.17
Sat Flow, veh/h	1757	2864	621	1757	2605	842	1757	1845	1562	1757	1845	1565
Grp Volume(v), veh/h	71	336	335	520	259	256	122	61	204	133	51	4
Grp Sat Flow(s),veh/h/ln	1757	1752	1733	1757	1752	1695	1757	1845	1562	1757	1845	1565
Q Serve(g_s), s	4.3	18.0	18.2	30.5	8.2	8.4	7.3	3.1	13.4	7.9	2.5	0.2
Cycle Q Clear(g_c), s	4.3	18.0	18.2	30.5	8.2	8.4	7.3	3.1	13.4	7.9	2.5	0.2
Prop In Lane	1.00		0.36	1.00		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	501	495	556	972	940	144	292	247	157	305	258
V/C Ratio(X)	0.85	0.67	0.68	0.94	0.27	0.27	0.85	0.21	0.83	0.85	0.17	0.02
Avail Cap(c_a), veh/h	231	660	652	810	1237	1196	331	538	456	364	573	486
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	50.2	33.5	33.7	35.3	12.4	12.5	48.1	38.9	43.3	47.7	38.1	37.1
Incr Delay (d2), s/veh	20.2	2.3	2.4	13.9	0.2	0.2	12.5	0.4	6.9	11.9	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	2.5	9.0	9.0	16.9	4.0	4.0	4.0	1.6	6.3	4.4	1.3	0.1
LnGrp Delay(d),s/veh	70.4	35.9	36.1	49.2	12.6	12.7	60.6	39.3	50.2	59.5	38.3	37.2
LnGrp LOS	E	D	D	D	B	B	E	D	D	E	D	D
Approach Vol, veh/h		742			1035			387			188	
Approach Delay, s/veh		39.3			31.0			51.8			53.3	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.6	34.4	13.5	20.8	9.1	62.9	12.7	21.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	14.5	39.5	22.5	31.0	14.5	74.5	20.5	33.0
Max Q Clear Time (g_c+I1), s	12.5	20.2	9.9	15.4	6.3	10.4	9.3	4.5
Green Ext Time (p_c), s	1.6	9.7	0.3	1.1	0.1	14.8	0.2	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	38.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	40	110	170	50	260	45	260	55	190	230	140
Future Volume (veh/h)	170	40	110	170	50	260	45	260	55	190	230	140
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	173	41	92	173	51	150	46	265	56	194	235	44
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	380	103	150	337	110	215	66	678	141	232	973	179
Arrive On Green	0.35	0.35	0.36	0.35	0.35	0.36	0.04	0.23	0.23	0.13	0.33	0.33
Sat Flow, veh/h	708	298	433	611	319	622	1757	2890	601	1757	2955	545
Grp Volume(v), veh/h	306	0	0	374	0	0	46	159	162	194	138	141
Grp Sat Flow(s),veh/h/ln	1439	0	0	1552	0	0	1757	1752	1739	1757	1752	1748
Q Serve(g_s), s	0.0	0.0	0.0	1.1	0.0	0.0	1.1	3.2	3.3	4.5	2.4	2.5
Cycle Q Clear(g_c), s	6.8	0.0	0.0	7.9	0.0	0.0	1.1	3.2	3.3	4.5	2.4	2.5
Prop In Lane	0.57		0.30	0.46		0.40	1.00		0.35	1.00		0.31
Lane Grp Cap(c), veh/h	633	0	0	663	0	0	66	411	408	232	577	575
V/C Ratio(X)	0.48	0.00	0.00	0.56	0.00	0.00	0.70	0.39	0.40	0.84	0.24	0.25
Avail Cap(c_a), veh/h	1194	0	0	1261	0	0	261	924	917	463	1126	1123
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	0.0	0.0	11.4	0.0	0.0	19.8	13.4	13.5	17.7	10.2	10.2
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.8	0.0	0.0	12.5	0.8	0.9	7.7	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	2.9	0.0	0.0	3.7	0.0	0.0	0.7	1.6	1.7	2.7	1.2	1.2
LnGrp Delay(d),s/veh	11.6	0.0	0.0	12.1	0.0	0.0	32.3	14.3	14.4	25.4	10.5	10.5
LnGrp LOS	B			B			C	B	B	C	B	B
Approach Vol, veh/h		306			374			367			473	
Approach Delay, s/veh		11.6			12.1			16.6			16.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.5	13.8		18.4	5.6	17.7		18.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	11.5	22.0		32.5	6.7	26.8		32.5
Max Q Clear Time (g_c+I1), s	8.5	5.3		9.9	3.1	4.5		8.8
Green Ext Time (p_c), s	0.2	4.5		4.9	0.0	5.1		5.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Notes

Intersection	
Int Delay, s/veh	80.8

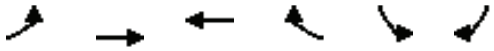
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	20	80	230	20	130	40	200	340	100	370	40
Future Vol, veh/h	30	20	80	230	20	130	40	200	340	100	370	40
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	31	20	82	235	20	133	41	204	347	102	378	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	798	1235	209	862	1081	278	418	0	0	551	0	0
Stage 1	602	602	-	459	459	-	-	-	-	-	-	-
Stage 2	196	633	-	403	622	-	-	-	-	-	-	-
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	275	174	794	247	215	716	1130	-	-	1008	-	-
Stage 1	451	485	-	549	562	-	-	-	-	-	-	-
Stage 2	784	469	-	592	475	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	184	151	794	~ 179	186	715	1130	-	-	1006	-	-
Mov Cap-2 Maneuver	184	151	-	~ 179	186	-	-	-	-	-	-	-
Stage 1	435	436	-	529	542	-	-	-	-	-	-	-
Stage 2	591	452	-	455	427	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.2	$ 329	0.6	1.8
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1130	-	-	328	241	1006	-	-
HCM Lane V/C Ratio	0.036	-	-	0.404	1.609	0.101	-	-
HCM Control Delay (s)	8.3	-	-	23.2	$ 329	9	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.9	24.3	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	260	160	110	320	400	280
Future Volume (vph)	260	160	110	320	400	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.89		0.98	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3113		3357	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3113		3357	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	265	163	112	327	408	286
RTOR Reduction (vph)	0	0	237	0	12	154
Lane Group Flow (vph)	265	163	202	0	465	63
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	5.1	19.1	10.5		11.0	11.0
Effective Green, g (s)	4.6	19.1	10.5		11.0	11.0
Actuated g/C Ratio	0.12	0.50	0.28		0.29	0.29
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	211	1757	857		969	411
v/s Ratio Prot	c0.15	0.05	c0.06			
v/s Ratio Perm					c0.14	0.04
v/c Ratio	1.26	0.09	0.24		0.48	0.15
Uniform Delay, d1	16.8	5.0	10.7		11.2	10.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	147.8	0.0	0.3		0.4	0.2
Delay (s)	164.5	5.0	11.0		11.6	10.3
Level of Service	F	A	B		B	B
Approach Delay (s)		103.8	11.0		11.2	
Approach LOS		F	B		B	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	38.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	460	70	0	600	40	150
Future Vol, veh/h	460	70	0	600	40	150
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	505	77	0	659	44	165

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	879	293
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	334	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	287	703
Stage 1	-	-	0	-	545	-
Stage 2	-	-	0	-	697	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	286	701
Mov Cap-2 Maneuver	-	-	-	-	286	-
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	695	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	537	-	-	-
HCM Lane V/C Ratio	0.389	-	-	-
HCM Control Delay (s)	15.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.8	-	-	-

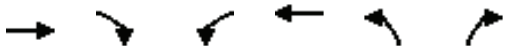
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	470	0	0	350	70	10	0	10	60	0	40
Future Vol, veh/h	110	470	0	0	350	70	10	0	10	60	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	96	96	92	92	92	96	92	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	115	490	0	0	365	73	11	0	11	63	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	438	0	-	490	0	0	903	1158	245	877	-	219
Stage 1	-	-	-	-	-	-	720	720	-	402	-	-
Stage 2	-	-	-	-	-	-	183	438	-	475	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1118	-	0	1070	-	-	232	195	755	243	0	785
Stage 1	-	-	0	-	-	-	385	430	-	596	0	-
Stage 2	-	-	0	-	-	-	801	577	-	539	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1118	-	-	1070	-	-	202	175	755	221	-	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	202	175	-	221	-	-
Stage 1	-	-	-	-	-	-	345	386	-	535	-	-
Stage 2	-	-	-	-	-	-	758	577	-	477	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	17.1	20.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	319	1118	-	1070	-	-	221	785
HCM Lane V/C Ratio	0.068	0.102	-	-	-	-	0.283	0.053
HCM Control Delay (s)	17.1	8.6	-	0	-	-	27.6	9.8
HCM Lane LOS	C	A	-	A	-	-	D	A
HCM 95th %tile Q(veh)	0.2	0.3	-	0	-	-	1.1	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	320	150	200	290	160	230
Future Volume (veh/h)	320	150	200	290	160	230
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	330	155	206	299	165	237
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	741	341	255	1952	472	420
Arrive On Green	0.31	0.31	0.14	0.55	0.27	0.27
Sat Flow, veh/h	2456	1087	1781	3647	1781	1585
Grp Volume(v), veh/h	247	238	206	299	165	237
Grp Sat Flow(s),veh/h/ln	1777	1673	1781	1777	1781	1585
Q Serve(g_s), s	4.8	4.9	4.8	1.8	3.2	5.6
Cycle Q Clear(g_c), s	4.8	4.9	4.8	1.8	3.2	5.6
Prop In Lane		0.65	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	557	525	255	1952	472	420
V/C Ratio(X)	0.44	0.45	0.81	0.15	0.35	0.56
Avail Cap(c_a), veh/h	1195	1125	806	2390	1859	1654
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	11.8	11.8	17.9	4.8	12.8	13.7
Incr Delay (d2), s/veh	1.9	2.1	6.0	0.1	1.2	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.7	2.1	0.4	1.3	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.7	14.0	24.0	4.9	14.0	16.8
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	485			505	402	
Approach Delay, s/veh	13.8			12.7	15.6	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.2	17.5				27.7	15.4
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	6.8	6.9				3.8	7.6
Green Ext Time (p_c), s	0.4	6.5				4.4	4.0

Intersection Summary	
HCM 6th Ctrl Delay	13.9
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	190	200	50	130	40	170	240	80	40	300	180
Future Volume (veh/h)	160	190	200	50	130	40	170	240	80	40	300	180
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	165	196	0	52	134	0	175	247	0	41	309	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	876		112	666		222	1045		91	785	
Arrive On Green	0.12	0.25	0.00	0.06	0.19	0.00	0.12	0.29	0.00	0.05	0.22	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	165	196	0	52	134	0	175	247	0	41	309	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.2	2.0	0.0	1.3	1.5	0.0	4.4	2.4	0.0	1.0	3.4	0.0
Cycle Q Clear(g_c), s	4.2	2.0	0.0	1.3	1.5	0.0	4.4	2.4	0.0	1.0	3.4	0.0
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	218	876		112	666		222	1045		91	785	
V/C Ratio(X)	0.76	0.22		0.46	0.20		0.79	0.24		0.45	0.39	
Avail Cap(c_a), veh/h	1019	2953		1403	2953		1403	2953		1019	2953	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.7	13.9	0.0	21.0	15.9	0.0	19.7	12.4	0.0	21.3	15.4	0.0
Incr Delay (d2), s/veh	5.3	0.3	0.0	3.0	0.4	0.0	6.2	0.3	0.0	3.4	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	1.8	0.7	0.0	0.6	0.5	0.0	2.0	0.8	0.0	0.5	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.0	14.3	0.0	23.9	16.3	0.0	25.9	12.7	0.0	24.8	16.2	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		361	A		186	A		422	A		350	A
Approach Delay, s/veh		19.2			18.4			18.2			17.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	17.6	6.9	15.4	9.8	14.2	9.7	12.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	4.4	3.3	4.0	6.4	5.4	6.2	3.5
Green Ext Time (p_c), s	0.1	3.4	0.1	2.6	0.5	4.3	0.4	1.7

Intersection Summary	
HCM 6th Ctrl Delay	18.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	550	1450	260	670	0	1150	0	320	0	0	0
Future Volume (veh/h)	30	550	1450	260	670	0	1150	0	320	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	31	567	0	268	691	0	1186	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	895	401	309	2048	0	1503	0	671	0	2	0
Arrive On Green	0.02	0.26	0.00	0.18	0.41	0.00	0.43	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	31	567	0	268	691	0	1186	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	1.5	12.2	0.0	12.6	8.0	0.0	24.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	12.2	0.0	12.6	8.0	0.0	24.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	43	895	401	309	2048	0	1503	0	671	0	2	0
V/C Ratio(X)	0.72	0.63	0.00	0.87	0.34	0.00	0.79	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	128	1029	460	392	2235	0	1733	0	773	0	97	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	41.2	28.2	0.0	34.1	17.4	0.0	21.1	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	19.6	1.8	0.0	15.3	0.2	0.0	2.9	0.0	0.0	0.0	0.0	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	1.0	6.1	0.0	7.4	3.8	0.0	12.6	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	60.9	29.9	0.0	49.4	17.6	0.0	23.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	E	C		D	B		C					
Approach Vol, veh/h		598			959			1186			0	
Approach Delay, s/veh		31.5			26.5			23.9			0.0	
Approach LOS		C			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	25.8		40.4	6.1	38.6		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	19.0	24.0		42.0	6.7	36.8		5.0
Max Q Clear Time (g_c+I1), s	14.6	14.2		26.8	3.5	10.0		0.0
Green Ext Time (p_c), s	0.4	6.5		9.6	0.0	12.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.5
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1210	70	360	1320	40	50	10	170	130	10	100
Future Volume (veh/h)	100	1210	70	360	1320	40	50	10	170	130	10	100
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	103	1247	69	371	1361	20	52	10	17	134	10	18
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	121	1511	84	404	2134	955	64	21	35	157	51	92
Arrive On Green	0.07	0.45	0.45	0.23	0.61	0.61	0.04	0.03	0.03	0.09	0.09	0.09
Sat Flow, veh/h	1757	3377	187	1757	3505	1568	1757	615	1045	1757	592	1065
Grp Volume(v), veh/h	103	646	670	371	1361	20	52	0	27	134	0	28
Grp Sat Flow(s),veh/h/ln	1757	1752	1812	1757	1752	1568	1757	0	1660	1757	0	1657
Q Serve(g_s), s	4.7	25.9	26.0	16.5	19.9	0.4	2.4	0.0	1.3	6.0	0.0	1.3
Cycle Q Clear(g_c), s	4.7	25.9	26.0	16.5	19.9	0.4	2.4	0.0	1.3	6.0	0.0	1.3
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.63	1.00		0.64
Lane Grp Cap(c), veh/h	121	784	811	404	2134	955	64	0	56	157	0	143
V/C Ratio(X)	0.85	0.82	0.83	0.92	0.64	0.02	0.81	0.00	0.48	0.86	0.00	0.20
Avail Cap(c_a), veh/h	171	786	813	477	2184	977	177	0	538	180	0	539
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.0	19.4	19.4	30.1	10.0	6.2	38.4	0.0	38.1	36.0	0.0	34.1
Incr Delay (d2), s/veh	24.0	7.9	7.8	20.6	0.9	0.0	20.8	0.0	8.8	28.6	0.0	0.7
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	3.1	14.1	14.6	10.4	9.7	0.2	1.5	0.0	0.7	4.2	0.0	0.6
LnGrp Delay(d),s/veh	61.0	27.3	27.2	50.8	10.9	6.2	59.2	0.0	46.9	64.6	0.0	34.7
LnGrp LOS	E	C	C	D	B	A	E		D	E		C
Approach Vol, veh/h		1419			1752			79			162	
Approach Delay, s/veh		29.7			19.3			55.0			59.4	
Approach LOS		C			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.5	39.9	11.1	6.7	9.5	52.9	6.9	10.9
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	22.3	36.0	8.7	26.0	8.3	50.0	8.6	26.1
Max Q Clear Time (g_c+I1), s	8.5	28.0	8.0	3.3	6.7	21.9	4.4	3.3
Green Ext Time (p_c), s	0.4	7.9	0.0	0.3	0.0	26.9	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	26.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	610	160	630	490	250	160	80	570	200	130	130
Future Volume (veh/h)	160	610	160	630	490	250	160	80	570	200	130	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.97
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	165	629	150	649	505	219	165	82	162	206	134	21
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	185	701	167	671	1257	542	184	235	198	224	277	229
Arrive On Green	0.11	0.25	0.25	0.38	0.53	0.52	0.10	0.13	0.13	0.13	0.15	0.15
Sat Flow, veh/h	1757	2804	668	1757	2385	1029	1757	1845	1553	1757	1845	1522
Grp Volume(v), veh/h	165	393	386	649	370	354	165	82	162	206	134	21
Grp Sat Flow(s),veh/h/ln	1757	1752	1719	1757	1752	1662	1757	1845	1553	1757	1845	1522
Q Serve(g_s), s	13.1	30.6	30.8	51.2	17.9	18.1	13.1	5.7	14.4	16.4	9.4	1.7
Cycle Q Clear(g_c), s	13.1	30.6	30.8	51.2	17.9	18.1	13.1	5.7	14.4	16.4	9.4	1.7
Prop In Lane	1.00		0.39	1.00		0.62	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	185	438	430	671	923	876	184	235	198	224	277	229
V/C Ratio(X)	0.89	0.90	0.90	0.97	0.40	0.40	0.90	0.35	0.82	0.92	0.48	0.09
Avail Cap(c_a), veh/h	303	471	462	733	923	876	260	313	264	261	314	259
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	62.5	51.3	51.4	42.8	20.1	20.2	62.5	56.4	60.1	61.0	55.1	51.8
Incr Delay (d2), s/veh	17.1	19.4	20.1	24.4	0.4	0.4	24.0	0.9	14.0	32.3	1.3	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	7.2	17.2	17.0	29.4	8.7	8.4	7.6	3.0	7.0	10.0	4.9	0.7
LnGrp Delay(d),s/veh	79.6	70.7	71.5	67.2	20.5	20.6	86.5	57.3	74.1	93.2	56.4	52.0
LnGrp LOS	E	E	E	E	C	C	F	E	E	F	E	D
Approach Vol, veh/h		944			1373			409			361	
Approach Delay, s/veh		72.6			42.6			75.7			77.2	
Approach LOS		E			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	58.0	39.3	22.0	22.0	18.9	78.5	18.8	25.2
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	54.5	37.5	21.5	24.0	24.9	72.1	21.4	24.1
Max Q Clear Time (g_c+I1), s	53.2	32.8	18.4	16.4	15.1	20.1	15.1	11.4
Green Ext Time (p_c), s	1.3	2.1	0.2	1.1	0.3	20.7	0.2	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	60.2
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	90	140	190	100	290	80	300	60	260	310	210
Future Volume (veh/h)	230	90	140	190	100	290	80	300	60	260	310	210
Number	3	8	18	7	4	14	5	2	12	1	6	16
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		0.99	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	237	93	126	196	103	256	82	309	50	268	320	80
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	323	123	140	281	144	303	93	592	95	294	864	213
Arrive On Green	0.46	0.46	0.47	0.46	0.46	0.47	0.05	0.20	0.20	0.17	0.31	0.31
Sat Flow, veh/h	527	268	303	455	312	657	1757	3022	483	1757	2787	687
Grp Volume(v), veh/h	456	0	0	555	0	0	82	178	181	268	199	201
Grp Sat Flow(s),veh/h/ln	1098	0	0	1423	0	0	1757	1752	1753	1757	1752	1721
Q Serve(g_s), s	3.8	0.0	0.0	0.0	0.0	0.0	3.2	6.2	6.3	10.2	6.0	6.2
Cycle Q Clear(g_c), s	27.1	0.0	0.0	23.3	0.0	0.0	3.2	6.2	6.3	10.2	6.0	6.2
Prop In Lane	0.52		0.28	0.35		0.46	1.00		0.28	1.00		0.40
Lane Grp Cap(c), veh/h	586	0	0	728	0	0	93	343	344	294	543	534
V/C Ratio(X)	0.78	0.00	0.00	0.76	0.00	0.00	0.88	0.52	0.53	0.91	0.37	0.38
Avail Cap(c_a), veh/h	620	0	0	766	0	0	237	522	522	294	578	568
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.0	0.0	0.0	15.9	0.0	0.0	32.1	24.5	24.6	27.9	18.3	18.4
Incr Delay (d2), s/veh	5.9	0.0	0.0	4.3	0.0	0.0	21.9	1.7	1.8	30.9	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	8.9	0.0	0.0	10.0	0.0	0.0	2.1	3.1	3.2	7.4	3.0	3.0
LnGrp Delay(d),s/veh	22.9	0.0	0.0	20.2	0.0	0.0	53.9	26.3	26.4	58.8	18.9	19.0
LnGrp LOS	C			C			D	C	C	E	B	B
Approach Vol, veh/h		456			555			441			668	
Approach Delay, s/veh		22.9			20.2			31.5			35.0	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.4	17.4		35.4	7.6	25.1		35.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	11.9	20.3		33.8	9.7	22.5		33.8
Max Q Clear Time (g_c+I1), s	12.2	8.3		25.3	5.2	8.2		29.1
Green Ext Time (p_c), s	0.0	4.8		4.6	0.1	5.3		2.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	344.3

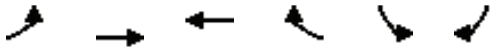
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	40	100	230	40	170	70	240	390	150	410	80
Future Vol, veh/h	30	40	100	230	40	170	70	240	390	150	410	80
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	31	41	103	237	41	175	72	247	402	155	423	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1063	1569	254	1137	1409	328	505	0	0	651	0	0
Stage 1	773	773	-	595	595	-	-	-	-	-	-	-
Stage 2	290	796	-	542	814	-	-	-	-	-	-	-
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	176	109	742	~ 155	136	665	1049	-	-	925	-	-
Stage 1	356	405	-	455	488	-	-	-	-	-	-	-
Stage 2	691	395	-	490	387	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	75	84	741	~ 69	105	663	1048	-	-	924	-	-
Mov Cap-2 Maneuver	75	84	-	~ 69	105	-	-	-	-	-	-	-
Stage 1	332	337	-	423	454	-	-	-	-	-	-	-
Stage 2	430	367	-	308	322	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	136.9	$ 1468.1	0.9	2.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1048	-	-	168	111	924	-	-
HCM Lane V/C Ratio	0.069	-	-	1.043	4.087	0.167	-	-
HCM Control Delay (s)	8.7	-	-	136.9	$ 1468.1	9.7	-	-
HCM Lane LOS	A	-	-	F	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	8.6	46.5	0.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	310	190	130	380	370	380
Future Volume (vph)	310	190	130	380	370	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.89		0.96	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3113		3307	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3113		3307	1427
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	320	196	134	392	381	392
RTOR Reduction (vph)	0	0	297	0	37	176
Lane Group Flow (vph)	320	196	229	0	493	67
Confl. Peds. (#/hr)					1	
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	11.7	26.9	11.7		13.2	13.2
Effective Green, g (s)	11.2	26.9	11.7		13.2	13.2
Actuated g/C Ratio	0.23	0.56	0.24		0.27	0.27
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	407	1960	757		907	391
v/s Ratio Prot	c0.18	0.06	c0.07			
v/s Ratio Perm					c0.15	0.05
v/c Ratio	0.79	0.10	0.30		0.54	0.17
Uniform Delay, d1	17.3	4.9	14.9		14.9	13.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	9.6	0.0	0.5		0.7	0.2
Delay (s)	27.0	5.0	15.3		15.5	13.5
Level of Service	C	A	B		B	B
Approach Delay (s)		18.6	15.3		14.9	
Approach LOS		B	B		B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	48.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	470	80	0	750	60	150
Future Vol, veh/h	470	80	0	750	60	150
Conflicting Peds, #/hr	0	2	2	0	4	3
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	485	82	0	773	62	155

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	919	289
Stage 1	-	-	-	-	528	-
Stage 2	-	-	-	-	391	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	270	708
Stage 1	-	-	0	-	556	-
Stage 2	-	-	0	-	653	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	268	704
Mov Cap-2 Maneuver	-	-	-	-	268	-
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	651	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	481	-	-	-
HCM Lane V/C Ratio	0.45	-	-	-
HCM Control Delay (s)	18.5	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2.3	-	-	-

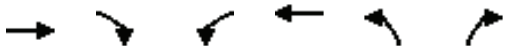
Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	410	0	10	400	80	10	10	10	50	0	40
Future Vol, veh/h	130	410	0	10	400	80	10	10	10	50	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	95	95	92	92	92	95	92	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	137	432	0	11	421	84	11	11	11	53	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	505	0	-	432	0	0	939	1233	216	981	-	253
Stage 1	-	-	-	-	-	-	706	706	-	485	-	-
Stage 2	-	-	-	-	-	-	233	527	-	496	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1056	-	0	1124	-	-	219	176	789	204	0	746
Stage 1	-	-	0	-	-	-	393	437	-	532	0	-
Stage 2	-	-	0	-	-	-	749	527	-	524	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1056	-	-	1124	-	-	184	151	789	170	-	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	151	-	170	-	-
Stage 1	-	-	-	-	-	-	342	380	-	463	-	-
Stage 2	-	-	-	-	-	-	697	520	-	437	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.3	23.7	24.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	225	1056	-	1124	-	-	170	746
HCM Lane V/C Ratio	0.145	0.13	-	0.01	-	-	0.31	0.056
HCM Control Delay (s)	23.7	8.9	-	8.2	0.1	-	35.4	10.1
HCM Lane LOS	C	A	-	A	A	-	E	B
HCM 95th %tile Q(veh)	0.5	0.4	-	0	-	-	1.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	290	140	180	270	160	250
Future Volume (veh/h)	290	140	180	270	160	250
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	309	149	191	287	170	266
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	702	331	254	1862	516	459
Arrive On Green	0.30	0.30	0.14	0.52	0.29	0.29
Sat Flow, veh/h	2437	1105	1781	3647	1781	1585
Grp Volume(v), veh/h	233	225	191	287	170	266
Grp Sat Flow(s),veh/h/ln	1777	1672	1781	1777	1781	1585
Q Serve(g_s), s	4.5	4.7	4.4	1.8	3.2	6.1
Cycle Q Clear(g_c), s	4.5	4.7	4.4	1.8	3.2	6.1
Prop In Lane		0.66	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	532	501	254	1862	516	459
V/C Ratio(X)	0.44	0.45	0.75	0.15	0.33	0.58
Avail Cap(c_a), veh/h	1201	1130	830	2402	1869	1663
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	12.1	12.2	17.7	5.3	12.0	13.0
Incr Delay (d2), s/veh	1.9	2.2	4.4	0.1	1.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.7	1.8	0.4	1.2	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.0	14.3	22.1	5.4	12.9	16.0
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	458			478	436	
Approach Delay, s/veh	14.2			12.1	14.8	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	9.6	16.8				26.5	16.4
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	6.4	6.7				3.8	8.1
Green Ext Time (p_c), s	0.4	6.2				4.2	4.3

Intersection Summary	
HCM 6th Ctrl Delay	13.7
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	180	180	40	140	70	140	300	60	40	300	170
Future Volume (veh/h)	170	180	180	40	140	70	140	300	60	40	300	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	188	0	42	146	0	146	312	0	42	312	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	885		112	627		228	994		112	763	
Arrive On Green	0.14	0.25	0.00	0.06	0.18	0.00	0.13	0.28	0.00	0.06	0.21	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	177	188	0	42	146	0	146	312	0	42	312	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.4	1.9	0.0	1.0	1.6	0.0	3.6	3.2	0.0	1.0	3.5	0.0
Cycle Q Clear(g_c), s	4.4	1.9	0.0	1.0	1.6	0.0	3.6	3.2	0.0	1.0	3.5	0.0
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	242	885		112	627		228	994		112	763	
V/C Ratio(X)	0.73	0.21		0.37	0.23		0.64	0.31		0.37	0.41	
Avail Cap(c_a), veh/h	1038	2915		1423	2915		1423	2915		1038	2915	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	13.8	0.0	20.8	16.4	0.0	19.2	13.2	0.0	20.8	15.7	0.0
Incr Delay (d2), s/veh	4.3	0.3	0.0	2.1	0.5	0.0	3.0	0.5	0.0	2.1	0.9	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	1.9	0.7	0.0	0.4	0.6	0.0	1.5	1.1	0.0	0.4	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	14.1	0.0	22.9	16.9	0.0	22.2	13.6	0.0	22.9	16.6	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		365	A		188	A		458	A		354	A
Approach Delay, s/veh		18.7			18.2			16.4			17.3	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.4	17.5	6.4	16.0	9.4	14.4	9.8	12.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.0	5.2	3.0	3.9	5.6	5.5	6.4	3.6
Green Ext Time (p_c), s	0.1	4.4	0.1	2.5	0.4	4.3	0.4	1.9

Intersection Summary	
HCM 6th Ctrl Delay	17.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	1090	482	57	1060	0	313	0	71	0	0	0
Future Volume (veh/h)	10	1090	482	57	1060	0	313	0	71	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	1112	0	58	1082	0	319	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	4	1744	780	100	2780	0	662	0	295	0	4	0
Arrive On Green	0.00	0.50	0.00	0.06	0.55	0.00	0.19	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	1112	0	58	1082	0	319	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.1	10.9	0.0	1.5	5.7	0.0	3.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.1	10.9	0.0	1.5	5.7	0.0	3.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	4	1744	780	100	2780	0	662	0	295	0	4	0
V/C Ratio(X)	2.47	0.64	0.00	0.58	0.39	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	170	2331	1043	716	4915	0	2713	0	1211	0	178	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	23.3	8.6	0.0	21.5	6.0	0.0	16.9	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	797.3	0.8	0.0	5.3	0.2	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	163.3	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	0.9	5.3	0.0	0.9	2.7	0.0	1.9	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	983.8	9.5	0.0	26.8	6.1	0.0	18.1	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	A		C	A		B					
Approach Vol, veh/h		1122			1140			319			0	
Approach Delay, s/veh		18.1			7.2			18.1			0.0	
Approach LOS		B			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	27.2		12.8	4.1	29.7		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	19.0	30.0		36.0	5.0	44.5		5.0
Max Q Clear Time (g_c+I1), s	3.5	12.9		5.8	2.1	7.7		0.0
Green Ext Time (p_c), s	0.1	9.3		3.1	0.0	12.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.3
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	394	10	60	540	20	0	0	20	50	0	20
Future Volume (veh/h)	50	394	10	60	540	20	0	0	20	50	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	51	402	9	61	551	11	0	0	0	51	0	3
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	71	1622	36	87	1654	740	7	7	0	71	0	63
Arrive On Green	0.04	0.46	0.46	0.05	0.47	0.47	0.00	0.00	0.00	0.04	0.00	0.04
Sat Flow, veh/h	1757	3505	78	1757	3505	1568	1757	1845	0	1757	0	1560
Grp Volume(v), veh/h	51	201	210	61	551	11	0	0	0	51	0	3
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1757	1845	0	1757	0	1560
Q Serve(g_s), s	0.8	1.9	1.9	0.9	2.6	0.1	0.0	0.0	0.0	0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.8	1.9	1.9	0.9	2.6	0.1	0.0	0.0	0.0	0.8	0.0	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	71	811	847	87	1654	740	7	7	0	71	0	63
V/C Ratio(X)	0.72	0.25	0.25	0.70	0.33	0.01	0.00	0.00	0.00	0.72	0.00	0.05
Avail Cap(c_a), veh/h	622	2483	2594	1048	5815	2601	406	1788	0	786	0	1849
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	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	4.4	4.4	12.6	4.4	3.8	0.0	0.0	0.0	12.7	0.0	12.4
Incr Delay (d2), s/veh	12.9	0.3	0.3	9.8	0.3	0.0	0.0	0.0	0.0	12.9	0.0	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	0.6	1.0	1.0	0.7	1.3	0.0	0.0	0.0	0.0	0.6	0.0	0.0
LnGrp Delay(d),s/veh	25.6	4.7	4.7	22.4	4.7	3.8	0.0	0.0	0.0	25.6	0.0	12.7
LnGrp LOS	C	A	A	C	A	A				C		B
Approach Vol, veh/h		462			623			0			54	
Approach Delay, s/veh		7.0			6.4			0.0			24.9	
Approach LOS		A			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.3	16.4	5.1	0.0	5.1	16.7	0.0	5.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	6.5	38.0	12.5	26.0	10.0	44.5	6.7	31.8
Max Q Clear Time (g_c+I1), s	2.9	3.9	2.8	0.0	2.8	4.6	0.0	2.0
Green Ext Time (p_c), s	0.1	5.0	0.1	0.0	0.0	8.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	210	30	180	240	150	10	20	154	90	20	30
Future Volume (veh/h)	40	210	30	180	240	150	10	20	154	90	20	30
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	41	214	23	184	245	72	10	20	21	92	20	8
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	56	699	74	228	851	244	6	118	100	127	256	217
Arrive On Green	0.03	0.22	0.20	0.13	0.32	0.30	0.00	0.06	0.06	0.07	0.14	0.14
Sat Flow, veh/h	1757	3195	340	1757	2687	772	1757	1845	1563	1757	1845	1566
Grp Volume(v), veh/h	41	116	121	184	158	159	10	20	21	92	20	8
Grp Sat Flow(s),veh/h/ln	1757	1752	1783	1757	1752	1707	1757	1845	1563	1757	1845	1566
Q Serve(g_s), s	0.7	1.7	1.8	3.2	2.1	2.2	0.1	0.3	0.4	1.6	0.3	0.1
Cycle Q Clear(g_c), s	0.7	1.7	1.8	3.2	2.1	2.2	0.1	0.3	0.4	1.6	0.3	0.1
Prop In Lane	1.00		0.19	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	383	390	228	555	540	6	118	100	127	256	217
V/C Ratio(X)	0.73	0.30	0.31	0.81	0.28	0.29	1.77	0.17	0.21	0.73	0.08	0.04
Avail Cap(c_a), veh/h	742	2880	2930	2661	4794	4669	1098	1427	1209	1132	1462	1241
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	14.9	10.1	10.2	13.1	8.0	8.1	15.5	13.7	13.8	14.1	11.6	11.6
Incr Delay (d2), s/veh	16.7	0.6	0.6	6.6	0.4	0.4	462.9	0.7	1.0	7.7	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	136.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.9	0.9	2.0	1.1	1.1	1.2	0.2	0.2	1.0	0.2	0.1
LnGrp Delay(d),s/veh	31.6	10.8	10.8	19.8	8.4	8.5	614.4	14.4	14.8	21.8	11.8	11.6
LnGrp LOS	C	B	B	B	A	A	F	B	B	C	B	B
Approach Vol, veh/h		278			501			51			120	
Approach Delay, s/veh		13.9			12.6			132.2			19.4	
Approach LOS		B			B			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	10.8	6.2	6.0	5.0	13.8	3.9	8.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	4.5	50.5	20.5	24.0	13.6	84.4	19.9	24.6
Max Q Clear Time (g_c+I1), s	5.2	3.8	3.6	2.4	2.7	4.2	2.1	2.3
Green Ext Time (p_c), s	0.5	2.1	0.2	0.1	0.0	3.0	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	10	10	0	15	30	149	10	10	140	70
Future Volume (veh/h)	20	0	10	10	0	15	30	149	10	10	140	70
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	0.96		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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	20	0	0	10	0	0	31	152	6	10	143	41
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	415	0	0	418	0	0	23	1203	47	9	877	244
Arrive On Green	0.02	0.00	0.00	0.02	0.00	0.00	0.01	0.35	0.35	0.00	0.32	0.32
Sat Flow, veh/h	1421	0	0	1570	0	0	1757	3438	135	1757	2710	753
Grp Volume(v), veh/h	20	0	0	10	0	0	31	77	81	10	91	93
Grp Sat Flow(s),veh/h/ln	1421	0	0	1570	0	0	1757	1752	1821	1757	1752	1710
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.6	0.1	0.7	0.7
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.1	0.0	0.0	0.2	0.6	0.6	0.1	0.7	0.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.07	1.00		0.44
Lane Grp Cap(c), veh/h	415	0	0	418	0	0	23	613	637	9	567	553
V/C Ratio(X)	0.05	0.00	0.00	0.02	0.00	0.00	1.36	0.13	0.13	1.06	0.16	0.17
Avail Cap(c_a), veh/h	2726	0	0	2756	0	0	603	2029	2108	979	2404	2347
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	0.0	9.0	0.0	0.0	9.2	4.1	4.1	9.3	4.5	4.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	211.3	0.1	0.1	155.1	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	1.7	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.0	0.0	0.0	1.4	0.3	0.3	0.7	0.4	0.4
LnGrp Delay(d),s/veh	9.1	0.0	0.0	9.0	0.0	0.0	222.6	4.3	4.3	166.2	4.7	4.7
LnGrp LOS	A			A			F	A	A	F	A	A
Approach Vol, veh/h		20			10			189			194	
Approach Delay, s/veh		9.1			9.0			40.1			13.0	
Approach LOS		A			A			D			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	3.8	10.5		4.4	4.2	10.0		4.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	10.9	21.6		33.5	6.9	25.6		33.5
Max Q Clear Time (g_c+I1), s	2.1	2.6		2.1	2.2	2.7		2.3
Green Ext Time (p_c), s	0.0	1.0		0.0	0.0	1.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C

Notes

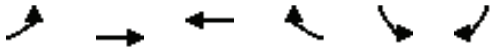
Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	10	100	0	94	10	95	180	90	50	20
Future Vol, veh/h	0	0	10	100	0	94	10	95	180	90	50	20
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	0	0	10	102	0	96	10	97	184	92	51	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	316	546	36	419	464	143	71	0	0	281	0	0
Stage 1	245	245	-	209	209	-	-	-	-	-	-	-
Stage 2	71	301	-	210	255	-	-	-	-	-	-	-
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	611	441	1025	516	492	875	1520	-	-	1271	-	-
Stage 1	734	700	-	771	725	-	-	-	-	-	-	-
Stage 2	928	661	-	770	693	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	510	407	1025	480	454	873	1520	-	-	1271	-	-
Mov Cap-2 Maneuver	510	407	-	480	454	-	-	-	-	-	-	-
Stage 1	729	650	-	766	720	-	-	-	-	-	-	-
Stage 2	819	656	-	707	643	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.5	13.6	0.3	4.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1520	-	-	1025	614	1271	-	-
HCM Lane V/C Ratio	0.007	-	-	0.01	0.322	0.072	-	-
HCM Control Delay (s)	7.4	-	-	8.5	13.6	8.1	-	-
HCM Lane LOS	A	-	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	1.4	0.2	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	145	104	92	140	86	74
Future Volume (vph)	145	104	92	140	86	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.91		0.97	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3188		3333	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3188		3333	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	148	106	94	143	88	76
RTOR Reduction (vph)	0	0	101	0	21	45
Lane Group Flow (vph)	148	106	136	0	91	7
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	10.0	24.8	11.3		5.3	5.3
Effective Green, g (s)	9.5	24.8	11.3		5.3	5.3
Actuated g/C Ratio	0.25	0.65	0.30		0.14	0.14
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	436	2281	945		463	198
v/s Ratio Prot	c0.08	0.03	c0.04			
v/s Ratio Perm					c0.03	0.01
v/c Ratio	0.34	0.05	0.14		0.20	0.04
Uniform Delay, d1	11.7	2.4	9.8		14.5	14.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	0.0	0.1		0.2	0.1
Delay (s)	12.2	2.4	10.0		14.7	14.3
Level of Service	B	A	A		B	B
Approach Delay (s)		8.1	10.0		14.6	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	38.1	Sum of lost time (s)	16.5
Intersection Capacity Utilization	30.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	260	40	0	200	35	85
Future Vol, veh/h	260	40	0	200	35	85
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	286	44	0	220	38	93

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	423	167
Stage 1	-	-	-	-	309	-
Stage 2	-	-	-	-	114	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	559	848
Stage 1	-	-	0	-	718	-
Stage 2	-	-	0	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	556	846
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	734	-	-	-
HCM Lane V/C Ratio	0.18	-	-	-
HCM Control Delay (s)	11	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	160	12	10	200	67	16
Future Volume (veh/h)	160	12	10	200	67	16
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	174	13	11	217	73	17
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	732	54	26	1604	136	32
Arrive On Green	0.22	0.22	0.01	0.46	0.10	0.10
Sat Flow, veh/h	3401	245	1757	3597	1379	321
Grp Volume(v), veh/h	91	96	11	217	91	0
Grp Sat Flow(s),veh/h/ln	1752	1801	1757	1752	1719	0
Q Serve(g_s), s	0.9	0.9	0.1	0.7	1.0	0.0
Cycle Q Clear(g_c), s	0.9	0.9	0.1	0.7	1.0	0.0
Prop In Lane		0.14	1.00		0.80	0.19
Lane Grp Cap(c), veh/h	387	398	26	1604	170	0
V/C Ratio(X)	0.24	0.24	0.42	0.14	0.54	0.00
Avail Cap(c_a), veh/h	1597	1642	476	4922	635	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.5	6.5	9.9	3.2	8.7	0.0
Incr Delay (d2), s/veh	0.3	0.3	10.5	0.0	2.6	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	0.4	0.5	0.1	0.3	0.6	0.0
LnGrp Delay(d),s/veh	6.8	6.8	20.4	3.2	11.3	0.0
LnGrp LOS	A	A	C	A	B	
Approach Vol, veh/h	187			228	91	
Approach Delay, s/veh	6.8			4.0	11.3	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.5	4.8	9.0				13.8
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		3.0	2.1	2.9				2.7
Green Ext Time (p_c), s		0.1	0.0	2.0				2.3

Intersection Summary	
HCM 2010 Ctrl Delay	6.4
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	165	11	0	210	0	17
Future Vol, veh/h	165	11	0	210	0	17
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	179	12	0	228	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	299	96
Stage 1	-	-	-	-	185	-
Stage 2	-	-	-	-	114	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	666	938
Stage 1	-	-	0	-	825	-
Stage 2	-	-	0	-	895	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	666	938
Mov Cap-2 Maneuver	-	-	-	-	666	-
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	895	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	938	-	-	-
HCM Lane V/C Ratio	0.02	-	-	-
HCM Control Delay (s)	8.9	-	-	-
HCM Lane LOS	A	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

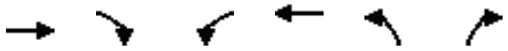
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	185	0	10	445	30	10	0	0	20	0	40
Future Vol, veh/h	30	185	0	10	445	30	10	0	0	20	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	35	215	0	11	517	35	11	0	0	23	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	552	0	-	215	0	0	566	859	108	735	-	276
Stage 1	-	-	-	-	-	-	285	285	-	557	-	-
Stage 2	-	-	-	-	-	-	281	574	-	178	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	1014	-	0	1352	-	-	407	292	925	308	0	721
Stage 1	-	-	0	-	-	-	698	674	-	482	0	-
Stage 2	-	-	0	-	-	-	702	501	-	806	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	1014	-	-	1352	-	-	368	278	925	297	-	721
Mov Cap-2 Maneuver	-	-	-	-	-	-	368	278	-	297	-	-
Stage 1	-	-	-	-	-	-	674	650	-	465	-	-
Stage 2	-	-	-	-	-	-	649	495	-	778	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.1	15.1	12.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	368	1014	-	1352	-	-	297	721
HCM Lane V/C Ratio	0.03	0.034	-	0.008	-	-	0.078	0.065
HCM Control Delay (s)	15.1	8.7	-	7.7	0	-	18.1	10.3
HCM Lane LOS	C	A	-	A	A	-	C	B
HCM 95th %tile Q(veh)	0.1	0.1	-	0	-	-	0.3	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	153	52	90	301	64	70
Future Volume (veh/h)	153	52	90	301	64	70
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	57	99	331	70	77
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	711	233	141	1802	317	282
Arrive On Green	0.27	0.27	0.08	0.51	0.18	0.18
Sat Flow, veh/h	2723	863	1781	3647	1781	1585
Grp Volume(v), veh/h	112	113	99	331	70	77
Grp Sat Flow(s),veh/h/ln	1777	1715	1781	1777	1781	1585
Q Serve(g_s), s	1.2	1.3	1.4	1.3	0.9	1.1
Cycle Q Clear(g_c), s	1.2	1.3	1.4	1.3	0.9	1.1
Prop In Lane		0.50	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	480	463	141	1802	317	282
V/C Ratio(X)	0.23	0.24	0.70	0.18	0.22	0.27
Avail Cap(c_a), veh/h	2029	1959	1368	4059	3157	2809
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	7.2	7.2	11.4	3.4	8.9	9.0
Incr Delay (d2), s/veh	0.8	0.9	6.2	0.2	0.9	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.4	0.6	0.1	0.3	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	8.1	8.2	17.6	3.6	9.8	10.4
LnGrp LOS	A	A	B	A	A	B
Approach Vol, veh/h	225			430	147	
Approach Delay, s/veh	8.1			6.8	10.1	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	6.0	10.9				16.9	8.5
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	3.4	3.3				3.3	3.1
Green Ext Time (p_c), s	0.2	2.9				5.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	82	91	50	176	30	155	100	30	10	122	70
Future Volume (veh/h)	50	82	91	50	176	30	155	100	30	10	122	70
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	90	0	55	193	0	170	110	0	11	134	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	734		120	734		239	1160		14	711	
Arrive On Green	0.07	0.21	0.00	0.07	0.21	0.00	0.13	0.33	0.00	0.01	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	55	90	0	55	193	0	170	110	0	11	134	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	1.2	0.8	0.0	1.2	1.9	0.0	3.7	0.9	0.0	0.3	1.3	0.0
Cycle Q Clear(g_c), s	1.2	0.8	0.0	1.2	1.9	0.0	3.7	0.9	0.0	0.3	1.3	0.0
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	120	734		120	734		239	1160		14	711	
V/C Ratio(X)	0.46	0.12		0.46	0.26		0.71	0.09		0.79	0.19	
Avail Cap(c_a), veh/h	1156	3351		1593	3351		1593	3351		1156	3351	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.3	13.2	0.0	18.3	13.6	0.0	16.9	9.6	0.0	20.2	13.6	0.0
Incr Delay (d2), s/veh	2.7	0.2	0.0	2.7	0.5	0.0	3.9	0.1	0.0	62.0	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	0.5	0.3	0.0	0.5	0.7	0.0	1.5	0.3	0.0	0.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	13.4	0.0	21.0	14.1	0.0	20.8	9.7	0.0	82.2	13.9	0.0
LnGrp LOS	C	B		C	B		C	A		F	B	
Approach Vol, veh/h		145	A		248	A		280	A		145	A
Approach Delay, s/veh		16.3			15.6			16.4			19.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.3	17.3	6.7	12.4	9.5	12.2	6.7	12.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	12.3	2.9	3.2	2.8	5.7	3.3	3.2	3.9
Green Ext Time (p_c), s	0.0	1.4	0.1	1.1	0.5	1.7	0.1	2.6

Intersection Summary	
HCM 6th Ctrl Delay	16.6
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	550	1013	206	610	0	1118	10	327	0	0	0
Future Volume (veh/h)	10	550	1013	206	610	0	1118	10	327	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	556	0	208	616	0	1136	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	10	843	355	259	1925	0	1555	0	694	0	3	0
Arrive On Green	0.01	0.24	0.00	0.15	0.38	0.00	0.44	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	556	0	208	616	0	1136	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.4	10.1	0.0	8.1	6.1	0.0	18.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.4	10.1	0.0	8.1	6.1	0.0	18.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	10	843	355	259	1925	0	1555	0	694	0	3	0
V/C Ratio(X)	1.03	0.66	0.00	0.80	0.32	0.00	0.73	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	112	1289	554	522	3026	0	1938	0	865	0	117	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	35.2	24.2	0.0	29.2	15.4	0.0	16.2	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	142.2	1.9	0.0	5.8	0.2	0.0	1.7	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.3	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	5.1	0.0	4.3	2.8	0.0	9.4	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	177.7	26.1	0.0	34.9	15.6	0.0	18.0	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	C		C	B		B					
Approach Vol, veh/h		566			824			1136			0	
Approach Delay, s/veh		28.8			20.5			18.0			0.0	
Approach LOS		C			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	21.0		35.3	4.4	31.0		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	21.0	25.0		39.0	5.0	41.5		5.0
Max Q Clear Time (g_c+I1), s	10.1	12.1		20.8	2.4	8.1		0.0
Green Ext Time (p_c), s	0.5	3.8		10.5	0.0	6.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1095	50	190	848	40	30	10	160	160	10	130
Future Volume (veh/h)	100	1095	50	190	848	40	30	10	160	160	10	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	101	1106	48	192	857	24	30	10	49	162	10	52
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	118	1562	68	228	1819	813	43	17	84	193	38	200
Arrive On Green	0.07	0.46	0.46	0.13	0.52	0.52	0.02	0.06	0.06	0.11	0.15	0.15
Sat Flow, veh/h	1757	3422	148	1757	3505	1566	1757	272	1332	1757	259	1345
Grp Volume(v), veh/h	101	566	588	192	857	24	30	0	59	162	0	62
Grp Sat Flow(s),veh/h/ln	1757	1752	1818	1757	1752	1566	1757	0	1604	1757	0	1604
Q Serve(g_s), s	3.8	17.2	17.3	7.1	10.3	0.5	1.1	0.0	2.4	6.0	0.0	2.3
Cycle Q Clear(g_c), s	3.8	17.2	17.3	7.1	10.3	0.5	1.1	0.0	2.4	6.0	0.0	2.3
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.83	1.00		0.84
Lane Grp Cap(c), veh/h	118	800	830	228	1819	813	43	0	101	193	0	238
V/C Ratio(X)	0.86	0.71	0.71	0.84	0.47	0.03	0.70	0.00	0.58	0.84	0.00	0.26
Avail Cap(c_a), veh/h	275	947	982	426	2195	981	161	0	628	370	0	819
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.7	14.5	14.5	28.2	10.2	7.8	32.2	0.0	30.3	29.0	0.0	25.1
Incr Delay (d2), s/veh	15.9	3.0	2.9	8.2	0.4	0.0	18.4	0.0	7.4	9.3	0.0	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	2.3	9.0	9.3	3.9	5.1	0.2	0.8	0.0	1.3	3.4	0.0	1.0
LnGrp Delay(d),s/veh	46.5	17.5	17.4	36.4	10.6	7.8	50.6	0.0	37.7	38.3	0.0	25.6
LnGrp LOS	D	B	B	D	B	A	D		D	D		C
Approach Vol, veh/h		1255			1073			89			224	
Approach Delay, s/veh		19.8			15.1			42.0			34.8	
Approach LOS		B			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	34.3	11.3	8.2	8.5	38.5	5.6	13.9
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	16.6	35.9	14.5	26.0	10.9	41.6	6.6	33.9
Max Q Clear Time (g_c+I1), s	19.1	19.3	8.0	4.4	5.8	12.3	3.1	4.3
Green Ext Time (p_c), s	0.3	11.1	0.2	0.3	0.1	12.3	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	779	110	354	454	180	100	70	326	130	70	70
Future Volume (veh/h)	80	779	110	354	454	180	100	70	326	130	70	70
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	81	787	96	358	459	142	101	71	-26	131	71	22
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	93	1193	145	412	1482	455	120	105	89	159	146	123
Arrive On Green	0.05	0.38	0.37	0.23	0.56	0.55	0.07	0.06	0.00	0.09	0.08	0.08
Sat Flow, veh/h	1757	3146	384	1757	2643	811	1757	1845	1568	1757	1845	1557
Grp Volume(v), veh/h	81	438	445	358	303	298	101	71	-26	131	71	22
Grp Sat Flow(s),veh/h/ln	1757	1752	1777	1757	1752	1701	1757	1845	1568	1757	1845	1557
Q Serve(g_s), s	3.1	13.9	13.9	13.1	6.1	6.3	3.8	2.5	0.0	4.9	2.5	0.9
Cycle Q Clear(g_c), s	3.1	13.9	13.9	13.1	6.1	6.3	3.8	2.5	0.0	4.9	2.5	0.9
Prop In Lane	1.00		0.22	1.00		0.48	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	664	674	412	983	954	120	105	89	159	146	123
V/C Ratio(X)	0.88	0.66	0.66	0.87	0.31	0.31	0.84	0.68	-0.29	0.83	0.49	0.18
Avail Cap(c_a), veh/h	394	1205	1222	1261	2070	2010	446	745	633	552	855	722
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	17.2	17.2	24.6	7.8	7.9	30.8	30.9	0.0	29.9	29.5	28.8
Incr Delay (d2), s/veh	21.4	1.6	1.6	5.7	0.3	0.3	14.6	7.4	0.0	10.3	2.5	0.7
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	2.0	7.0	7.1	7.0	3.0	3.0	2.3	1.5	0.0	2.8	1.4	0.4
LnGrp Delay(d),s/veh	52.9	18.8	18.8	30.3	8.0	8.2	45.4	38.3	0.0	40.2	32.0	29.5
LnGrp LOS	D	B	B	C	A	A	D	D		D	C	C
Approach Vol, veh/h		964			959			146			224	
Approach Delay, s/veh		21.7			16.4			50.1			36.5	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	29.4	10.0	7.8	7.5	41.5	8.6	9.3
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	8.5	45.5	21.5	27.0	15.5	78.5	17.5	31.0
Max Q Clear Time (g_c+I1), s	5.1	15.9	6.9	4.5	5.1	8.3	5.8	4.5
Green Ext Time (p_c), s	1.1	9.0	0.3	0.3	0.1	6.2	0.2	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	27	100	81	40	158	30	198	30	92	212	130
Future Volume (veh/h)	140	27	100	81	40	158	30	198	30	92	212	130
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	141	27	81	82	40	108	30	200	4	93	214	64
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	395	57	111	289	91	166	31	842	17	132	794	232
Arrive On Green	0.21	0.21	0.23	0.21	0.21	0.23	0.02	0.24	0.24	0.08	0.30	0.30
Sat Flow, veh/h	809	267	519	454	425	778	1757	3514	70	1757	2676	780
Grp Volume(v), veh/h	249	0	0	230	0	0	30	100	104	93	138	140
Grp Sat Flow(s),veh/h/ln	1595	0	0	1657	0	0	1757	1752	1832	1757	1752	1704
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.4	1.2	1.2	1.3	1.5	1.6
Cycle Q Clear(g_c), s	3.3	0.0	0.0	3.0	0.0	0.0	0.4	1.2	1.2	1.3	1.5	1.6
Prop In Lane	0.57		0.33	0.36		0.47	1.00		0.04	1.00		0.46
Lane Grp Cap(c), veh/h	563	0	0	546	0	0	31	420	439	132	520	506
V/C Ratio(X)	0.44	0.00	0.00	0.42	0.00	0.00	0.95	0.24	0.24	0.71	0.27	0.28
Avail Cap(c_a), veh/h	1936	0	0	2030	0	0	483	1584	1655	759	1859	1808
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.1	0.0	0.0	9.0	0.0	0.0	12.5	7.8	7.8	11.5	6.8	6.9
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.5	0.0	0.0	63.2	0.4	0.4	6.7	0.4	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	1.7	0.0	0.0	1.5	0.0	0.0	0.8	0.6	0.6	0.9	0.8	0.8
LnGrp Delay(d),s/veh	9.6	0.0	0.0	9.5	0.0	0.0	75.7	8.2	8.2	18.2	7.2	7.3
LnGrp LOS	A			A			E	A	A	B	A	A
Approach Vol, veh/h		249			230			234			371	
Approach Delay, s/veh		9.6			9.5			16.9			10.0	
Approach LOS		A			A			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	10.1		9.4	4.5	11.6		9.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	11.5	23.0		31.5	7.5	27.0		31.5
Max Q Clear Time (g_c+I1), s	3.3	3.2		5.0	2.4	3.6		5.3
Green Ext Time (p_c), s	0.1	1.4		1.5	0.0	2.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Notes

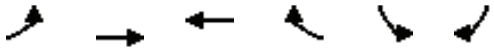
Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	17	60	137	20	83	50	145	201	82	251	60
Future Vol, veh/h	30	17	60	137	20	83	50	145	201	82	251	60
Conflicting Peds, #/hr	0	0	2	2	0	0	3	0	1	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	30	17	61	138	20	84	51	146	203	83	254	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	639	906	163	655	835	176	318	0	0	350	0	0
Stage 1	454	454	-	351	351	-	-	-	-	-	-	-
Stage 2	185	452	-	304	484	-	-	-	-	-	-	-
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	359	273	850	349	300	834	1232	-	-	1198	-	-
Stage 1	552	565	-	636	628	-	-	-	-	-	-	-
Stage 2	796	566	-	678	548	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	279	242	846	281	266	833	1228	-	-	1197	-	-
Mov Cap-2 Maneuver	279	242	-	281	266	-	-	-	-	-	-	-
Stage 1	528	524	-	609	601	-	-	-	-	-	-	-
Stage 2	663	542	-	566	509	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.2	32.9	1	1.7
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1228	-	-	430	362	1197	-	-
HCM Lane V/C Ratio	0.041	-	-	0.251	0.67	0.069	-	-
HCM Control Delay (s)	8.1	-	-	16.2	32.9	8.2	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1	4.6	0.2	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	245	185	174	151	195	253
Future Volume (vph)	245	185	174	151	195	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.93		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3241		3279	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3241		3279	1427
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	247	187	176	153	197	256
RTOR Reduction (vph)	0	0	116	0	83	115
Lane Group Flow (vph)	247	187	213	0	227	28
Confl. Peds. (#/hr)				2		
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	11.6	25.2	10.1		8.2	8.2
Effective Green, g (s)	11.1	25.2	10.1		8.2	8.2
Actuated g/C Ratio	0.27	0.61	0.24		0.20	0.20
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	469	2133	790		649	282
v/s Ratio Prot	c0.14	0.05	c0.07			
v/s Ratio Perm					c0.07	0.02
v/c Ratio	0.53	0.09	0.27		0.35	0.10
Uniform Delay, d1	12.9	3.3	12.7		14.3	13.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.1	0.0	0.4		0.3	0.2
Delay (s)	14.0	3.4	13.1		14.6	13.7
Level of Service	B	A	B		B	B
Approach Delay (s)		9.4	13.1		14.4	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	41.4	Sum of lost time (s)	16.5
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	502	60	0	583	50	125
Future Vol, veh/h	502	60	0	583	50	125
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	552	66	0	641	55	137

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	910	311
Stage 1	-	-	-	-	586	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	274	685
Stage 1	-	-	0	-	519	-
Stage 2	-	-	0	-	705	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	273	684
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	478	-	-	-
HCM Lane V/C Ratio	0.402	-	-	-
HCM Control Delay (s)	17.5	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	467	33	28	465	37	9
Future Volume (veh/h)	467	33	28	465	37	9
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	508	36	30	505	40	10
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1289	91	66	2093	80	20
Arrive On Green	0.39	0.39	0.04	0.60	0.06	0.06
Sat Flow, veh/h	3413	235	1757	3597	1347	337
Grp Volume(v), veh/h	268	276	30	505	51	0
Grp Sat Flow(s),veh/h/ln	1752	1803	1757	1752	1718	0
Q Serve(g_s), s	2.9	2.9	0.4	1.8	0.8	0.0
Cycle Q Clear(g_c), s	2.9	2.9	0.4	1.8	0.8	0.0
Prop In Lane		0.13	1.00		0.78	0.20
Lane Grp Cap(c), veh/h	680	700	66	2093	102	0
V/C Ratio(X)	0.39	0.40	0.46	0.24	0.50	0.00
Avail Cap(c_a), veh/h	1238	1273	369	3813	492	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	5.8	5.8	12.3	2.5	11.9	0.0
Incr Delay (d2), s/veh	0.4	0.4	4.9	0.1	3.8	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	1.4	1.5	0.3	0.9	0.5	0.0
LnGrp Delay(d),s/veh	6.2	6.2	17.2	2.5	15.7	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	544			535	51	
Approach Delay, s/veh	6.2			3.4	15.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.1	5.5	14.7				20.1
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		2.8	2.4	4.9				3.8
Green Ext Time (p_c), s		0.0	0.0	5.3				6.8

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	443	33	0	493	0	9
Future Vol, veh/h	443	33	0	493	0	9
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	482	36	0	536	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	767	259
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	268	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	336	737
Stage 1	-	-	0	-	572	-
Stage 2	-	-	0	-	750	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	336	737
Mov Cap-2 Maneuver	-	-	-	-	336	-
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	750	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	737	-	-	-
HCM Lane V/C Ratio	0.013	-	-	-
HCM Control Delay (s)	10	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

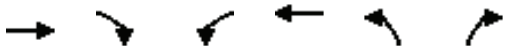
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	404	0	10	562	50	10	10	10	40	0	40
Future Vol, veh/h	80	404	0	10	562	50	10	10	10	40	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	92	92	86	86	92	92	92	86	92	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	470	0	11	653	58	11	11	11	47	0	47

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	711	0	-	470	0	0	1005	1389	235	1131	-	356
Stage 1	-	-	-	-	-	-	656	656	-	704	-	-
Stage 2	-	-	-	-	-	-	349	733	-	427	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	884	-	0	1088	-	-	196	141	767	158	0	640
Stage 1	-	-	0	-	-	-	421	460	-	394	0	-
Stage 2	-	-	0	-	-	-	640	424	-	576	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	884	-	-	1088	-	-	165	124	767	132	-	640
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	124	-	132	-	-
Stage 1	-	-	-	-	-	-	377	412	-	353	-	-
Stage 2	-	-	-	-	-	-	583	417	-	495	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.2	27.3	28.8
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	194	884	-	1088	-	-	132	640
HCM Lane V/C Ratio	0.168	0.105	-	0.01	-	-	0.352	0.073
HCM Control Delay (s)	27.3	9.6	-	8.3	0.1	-	46.4	11.1
HCM Lane LOS	D	A	-	A	A	-	E	B
HCM 95th %tile Q(veh)	0.6	0.4	-	0	-	-	1.4	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	278	136	170	397	175	130
Future Volume (veh/h)	278	136	170	397	175	130
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	287	140	175	409	180	134
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	750	355	213	1976	388	346
Arrive On Green	0.32	0.32	0.12	0.56	0.22	0.22
Sat Flow, veh/h	2414	1099	1781	3647	1781	1585
Grp Volume(v), veh/h	218	209	175	409	180	134
Grp Sat Flow(s),veh/h/ln	1777	1643	1781	1777	1781	1585
Q Serve(g_s), s	3.3	3.5	3.4	2.0	3.1	2.6
Cycle Q Clear(g_c), s	3.3	3.5	3.4	2.0	3.1	2.6
Prop In Lane		0.67	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	574	531	213	1976	388	346
V/C Ratio(X)	0.38	0.39	0.82	0.21	0.46	0.39
Avail Cap(c_a), veh/h	1456	1346	981	2912	2265	2015
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	9.2	9.3	15.2	3.9	12.0	11.8
Incr Delay (d2), s/veh	1.4	1.6	7.6	0.2	2.2	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	1.1	1.5	0.3	1.2	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.7	10.9	22.8	4.1	14.3	13.7
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	427			584	314	
Approach Delay, s/veh	10.8			9.7	14.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	8.2	15.4				23.7	11.7
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	5.4	5.5				4.0	5.1
Green Ext Time (p_c), s	0.4	5.9				6.2	3.0

Intersection Summary			
HCM 6th Ctrl Delay		11.1	
HCM 6th LOS		B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	136	172	60	160	40	257	180	50	50	255	170
Future Volume (veh/h)	100	136	172	60	160	40	257	180	50	50	255	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	105	143	0	63	168	0	271	189	0	53	268	0
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	731		130	633		335	1138		113	695	
Arrive On Green	0.10	0.21	0.00	0.07	0.18	0.00	0.19	0.32	0.00	0.06	0.20	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	105	143	0	63	168	0	271	189	0	53	268	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	2.7	1.6	0.0	1.6	1.9	0.0	6.9	1.8	0.0	1.4	3.1	0.0
Cycle Q Clear(g_c), s	2.7	1.6	0.0	1.6	1.9	0.0	6.9	1.8	0.0	1.4	3.1	0.0
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	178	731		130	633		335	1138		113	695	
V/C Ratio(X)	0.59	0.20		0.49	0.27		0.81	0.17		0.47	0.39	
Avail Cap(c_a), veh/h	997	2889		1373	2889		1373	2889		997	2889	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	20.4	15.6	0.0	21.1	16.8	0.0	18.4	11.6	0.0	21.4	16.6	0.0
Incr Delay (d2), s/veh	3.1	0.3	0.0	2.8	0.6	0.0	4.7	0.2	0.0	3.0	0.9	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	1.1	0.6	0.0	0.7	0.7	0.0	2.8	0.6	0.0	0.6	1.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.5	15.9	0.0	23.9	17.4	0.0	23.1	11.7	0.0	24.4	17.5	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		248	A		231	A		460	A		321	A
Approach Delay, s/veh		19.1			19.2			18.4			18.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	19.2	7.4	13.7	12.9	13.3	8.7	12.4
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.4	3.8	3.6	3.6	8.9	5.1	4.7	3.9
Green Ext Time (p_c), s	0.1	2.5	0.1	1.8	0.8	3.7	0.2	2.2

Intersection Summary	
HCM 6th Ctrl Delay	18.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	880	1018	233	870	0	1224	0	390	0	0	0
Future Volume (veh/h)	10	880	1018	233	870	0	1224	0	390	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	10	898	0	238	888	0	1249	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
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	12	1100	492	278	2343	0	1383	0	617	0	2	0
Arrive On Green	0.01	0.31	0.00	0.16	0.47	0.00	0.39	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	10	898	0	238	888	0	1249	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	0.5	21.1	0.0	11.8	10.2	0.0	29.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	21.1	0.0	11.8	10.2	0.0	29.9	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	12	1100	492	278	2343	0	1383	0	617	0	2	0
V/C Ratio(X)	0.85	0.82	0.00	0.86	0.38	0.00	0.90	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	89	1217	544	374	2566	0	1416	0	632	0	93	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	44.3	28.3	0.0	36.6	15.5	0.0	25.5	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	83.5	4.9	0.0	13.8	0.2	0.0	8.8	0.0	0.0	0.0	0.0	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	0.5	11.0	0.0	6.8	4.7	0.0	16.1	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	127.8	33.2	0.0	50.4	15.7	0.0	34.3	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	F	C		D	B		C					
Approach Vol, veh/h		908			1126			1249			0	
Approach Delay, s/veh		34.2			23.1			34.3			0.0	
Approach LOS		C			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.1	32.0		39.2	4.6	45.6		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	19.0	30.0		36.0	5.0	44.5		5.0
Max Q Clear Time (g_c+I1), s	13.8	23.1		31.9	2.5	12.2		0.0
Green Ext Time (p_c), s	0.4	3.9		3.3	0.0	9.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1244	30	210	930	40	30	10	170	150	10	70
Future Volume (veh/h)	100	1244	30	210	930	40	30	10	170	150	10	70
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.98	1.00		0.99
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	102	1269	29	214	949	19	31	10	18	153	10	16
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
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	119	1679	38	249	1939	868	44	30	55	181	83	132
Arrive On Green	0.07	0.48	0.48	0.14	0.55	0.55	0.03	0.05	0.05	0.10	0.13	0.13
Sat Flow, veh/h	1757	3503	80	1757	3505	1568	1757	584	1052	1757	636	1018
Grp Volume(v), veh/h	102	635	663	214	949	19	31	0	28	153	0	26
Grp Sat Flow(s),veh/h/ln	1757	1752	1831	1757	1752	1568	1757	0	1636	1757	0	1654
Q Serve(g_s), s	4.1	21.1	21.2	8.5	11.9	0.4	1.3	0.0	1.2	6.1	0.0	1.0
Cycle Q Clear(g_c), s	4.1	21.1	21.2	8.5	11.9	0.4	1.3	0.0	1.2	6.1	0.0	1.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		0.64	1.00		0.62
Lane Grp Cap(c), veh/h	119	840	877	249	1939	868	44	0	85	181	0	215
V/C Ratio(X)	0.85	0.76	0.76	0.86	0.49	0.02	0.70	0.00	0.33	0.85	0.00	0.12
Avail Cap(c_a), veh/h	233	931	972	393	2180	975	152	0	595	295	0	735
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.0	15.2	15.2	30.0	9.8	7.2	34.6	0.0	32.7	31.5	0.0	27.5
Incr Delay (d2), s/veh	15.4	4.2	4.0	10.7	0.4	0.0	18.2	0.0	3.2	11.5	0.0	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	2.5	11.0	11.5	4.8	5.8	0.2	0.8	0.0	0.6	3.6	0.0	0.5
LnGrp Delay(d),s/veh	48.4	19.4	19.2	40.7	10.2	7.2	52.8	0.0	35.9	43.0	0.0	27.8
LnGrp LOS	D	B	B	D	B	A	D		D	D		C
Approach Vol, veh/h		1400			1182			59			179	
Approach Delay, s/veh		21.4			15.7			44.8			40.8	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	38.3	11.4	7.7	8.9	43.6	5.8	13.3
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	10.5	38.0	12.5	26.0	10.0	44.5	6.7	31.8
Max Q Clear Time (g_c+I1), s	10.5	23.2	8.1	3.2	6.1	13.9	3.3	3.0
Green Ext Time (p_c), s	0.3	11.1	0.1	0.1	0.1	14.1	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	20.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	930	130	370	588	150	120	60	324	130	50	40
Future Volume (veh/h)	70	930	130	370	588	150	120	60	324	130	50	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
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		0.99	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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	71	949	120	378	600	127	122	61	35	133	51	4
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
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	82	1296	164	421	1748	369	146	126	106	159	140	118
Arrive On Green	0.05	0.41	0.41	0.24	0.61	0.60	0.08	0.07	0.07	0.09	0.08	0.08
Sat Flow, veh/h	1757	3130	396	1757	2881	608	1757	1845	1555	1757	1845	1562
Grp Volume(v), veh/h	71	531	538	378	364	363	122	61	35	133	51	4
Grp Sat Flow(s),veh/h/ln	1757	1752	1774	1757	1752	1737	1757	1845	1555	1757	1845	1562
Q Serve(g_s), s	3.4	21.7	21.8	17.8	8.8	8.9	5.8	2.7	1.8	6.4	2.2	0.2
Cycle Q Clear(g_c), s	3.4	21.7	21.8	17.8	8.8	8.9	5.8	2.7	1.8	6.4	2.2	0.2
Prop In Lane	1.00		0.22	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	82	725	734	421	1064	1054	146	126	106	159	140	118
V/C Ratio(X)	0.87	0.73	0.73	0.90	0.34	0.34	0.83	0.48	0.33	0.84	0.37	0.03
Avail Cap(c_a), veh/h	270	1047	1060	968	1744	1728	399	519	437	412	532	450
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	40.4	21.0	21.1	31.4	8.3	8.4	38.5	38.3	37.9	38.2	37.5	36.5
Incr Delay (d2), s/veh	22.5	2.1	2.1	7.1	0.3	0.3	11.5	2.9	1.8	10.8	1.6	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	2.2	10.9	11.0	9.4	4.3	4.3	3.3	1.5	0.8	3.5	1.2	0.1
LnGrp Delay(d),s/veh	62.9	23.1	23.2	38.5	8.6	8.7	50.1	41.2	39.7	49.0	39.1	36.7
LnGrp LOS	E	C	C	D	A	A	D	D	D	D	D	D
Approach Vol, veh/h		1140			1105			218			188	
Approach Delay, s/veh		25.6			18.8			45.9			46.0	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.4	39.3	11.7	9.8	8.0	55.8	11.1	10.5
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	7.5	50.5	20.5	24.0	13.6	84.4	19.9	24.6
Max Q Clear Time (g_c+I1), s	9.8	23.8	8.4	4.7	5.4	10.9	7.8	4.2
Green Ext Time (p_c), s	1.2	11.0	0.2	0.3	0.1	8.0	0.2	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	25	110	94	50	138	40	226	25	99	181	140
Future Volume (veh/h)	170	25	110	94	50	138	40	226	25	99	181	140
Number	3	8	18	7	4	14	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	173	26	92	96	51	26	41	231	26	101	185	44
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
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	418	67	128	393	185	66	54	692	77	140	752	175
Arrive On Green	0.27	0.27	0.29	0.27	0.27	0.29	0.03	0.22	0.22	0.08	0.27	0.27
Sat Flow, veh/h	786	251	479	712	693	249	1757	3180	354	1757	2824	656
Grp Volume(v), veh/h	291	0	0	173	0	0	41	126	131	101	113	116
Grp Sat Flow(s),veh/h/ln	1516	0	0	1654	0	0	1757	1752	1782	1757	1752	1727
Q Serve(g_s), s	2.4	0.0	0.0	0.0	0.0	0.0	0.6	1.7	1.7	1.5	1.4	1.5
Cycle Q Clear(g_c), s	4.5	0.0	0.0	2.1	0.0	0.0	0.6	1.7	1.7	1.5	1.4	1.5
Prop In Lane	0.59		0.32	0.55		0.15	1.00		0.20	1.00		0.38
Lane Grp Cap(c), veh/h	614	0	0	645	0	0	54	381	388	140	467	460
V/C Ratio(X)	0.47	0.00	0.00	0.27	0.00	0.00	0.76	0.33	0.34	0.72	0.24	0.25
Avail Cap(c_a), veh/h	1926	0	0	1976	0	0	408	1373	1396	663	1627	1604
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.9	0.0	0.0	8.2	0.0	0.0	13.3	9.1	9.1	12.4	7.9	7.9
Incr Delay (d2), s/veh	0.6	0.0	0.0	0.2	0.0	0.0	19.3	0.7	0.7	6.9	0.4	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	2.0	0.0	0.0	1.1	0.0	0.0	0.6	0.9	0.9	1.0	0.7	0.7
LnGrp Delay(d),s/veh	9.4	0.0	0.0	8.4	0.0	0.0	32.5	9.8	9.8	19.3	8.3	8.4
LnGrp LOS	A			A			C	A	A	B	A	A
Approach Vol, veh/h		291			173			298			330	
Approach Delay, s/veh		9.4			8.4			12.9			11.7	
Approach LOS		A			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.2	10.0		11.4	4.8	11.3		11.4
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	10.3	21.6		33.5	6.9	25.6		33.5
Max Q Clear Time (g_c+I1), s	3.5	3.7		4.1	2.6	3.5		6.5
Green Ext Time (p_c), s	0.1	1.8		1.1	0.0	1.8		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

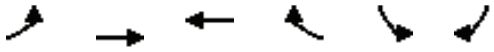
Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	11	80	130	20	69	40	192	176	51	294	40
Future Vol, veh/h	30	11	80	130	20	69	40	192	176	51	294	40
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
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	31	11	82	133	20	70	41	196	180	52	300	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	617	883	171	628	813	190	341	0	0	376	0	0
Stage 1	425	425	-	368	368	-	-	-	-	-	-	-
Stage 2	192	458	-	260	445	-	-	-	-	-	-	-
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	372	281	840	365	309	816	1208	-	-	1172	-	-
Stage 1	575	582	-	621	617	-	-	-	-	-	-	-
Stage 2	789	563	-	719	570	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	302	259	840	300	285	814	1208	-	-	1172	-	-
Mov Cap-2 Maneuver	302	259	-	300	285	-	-	-	-	-	-	-
Stage 1	555	556	-	600	596	-	-	-	-	-	-	-
Stage 2	671	544	-	608	545	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.3	28.2	0.8	1.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1208	-	-	510	372	1172	-	-
HCM Lane V/C Ratio	0.034	-	-	0.242	0.601	0.044	-	-
HCM Control Delay (s)	8.1	-	-	14.3	28.2	8.2	-	-
HCM Lane LOS	A	-	-	B	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	3.8	0.1	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	148	270	172	260	299	205
Future Volume (vph)	148	270	172	260	299	205
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frt	1.00	1.00	0.91		0.98	0.85
Flt Protected	0.95	1.00	1.00		0.96	1.00
Satd. Flow (prot)	1752	3505	3189		3360	1427
Flt Permitted	0.95	1.00	1.00		0.96	1.00
Satd. Flow (perm)	1752	3505	3189		3360	1427
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	151	276	176	265	305	209
RTOR Reduction (vph)	0	0	197	0	12	124
Lane Group Flow (vph)	151	276	244	0	341	37
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	10.8	25.6	11.3		10.2	10.2
Effective Green, g (s)	10.3	25.6	11.3		10.2	10.2
Actuated g/C Ratio	0.24	0.58	0.26		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	412	2048	822		782	332
v/s Ratio Prot	c0.09	0.08	c0.08			
v/s Ratio Perm					c0.10	0.03
v/c Ratio	0.37	0.13	0.30		0.44	0.11
Uniform Delay, d1	14.0	4.1	13.1		14.3	13.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.1	0.4		0.4	0.2
Delay (s)	14.6	4.2	13.5		14.7	13.4
Level of Service	B	A	B		B	B
Approach Delay (s)		7.8	13.5		14.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	12.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	43.8	Sum of lost time (s)	16.5
Intersection Capacity Utilization	42.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	489	70	0	664	40	150
Future Vol, veh/h	489	70	0	664	40	150
Conflicting Peds, #/hr	0	1	2	0	4	1
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	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	537	77	0	730	44	165

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	946	309
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	369	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	260	687
Stage 1	-	-	0	-	525	-
Stage 2	-	-	0	-	670	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	259	686
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	668	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	509	-	-	-
HCM Lane V/C Ratio	0.41	-	-	-
HCM Control Delay (s)	16.9	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	465	38	33	473	43	11
Future Volume (veh/h)	465	38	33	473	43	11
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	505	41	36	514	47	12
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1264	102	77	2092	90	23
Arrive On Green	0.38	0.38	0.04	0.60	0.07	0.07
Sat Flow, veh/h	3376	266	1757	3597	1345	343
Grp Volume(v), veh/h	269	277	36	514	60	0
Grp Sat Flow(s),veh/h/ln	1752	1798	1757	1752	1717	0
Q Serve(g_s), s	3.0	3.0	0.5	1.9	0.9	0.0
Cycle Q Clear(g_c), s	3.0	3.0	0.5	1.9	0.9	0.0
Prop In Lane		0.15	1.00		0.78	0.20
Lane Grp Cap(c), veh/h	674	692	77	2092	115	0
V/C Ratio(X)	0.40	0.40	0.47	0.25	0.52	0.00
Avail Cap(c_a), veh/h	1210	1242	361	3729	481	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	6.0	6.0	12.5	2.6	12.1	0.0
Incr Delay (d2), s/veh	0.4	0.4	4.3	0.1	3.6	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	1.5	1.5	0.3	0.9	0.5	0.0
LnGrp Delay(d),s/veh	6.4	6.4	16.8	2.6	15.7	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	546			550	60	
Approach Delay, s/veh	6.4			3.5	15.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.3	5.7	14.8				20.5
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		2.9	2.5	5.0				3.9
Green Ext Time (p_c), s		0.0	0.0	5.3				6.9

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	438	38	0	506	0	10
Future Vol, veh/h	438	38	0	506	0	10
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	476	41	0	550	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	772	259
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	275	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	334	737
Stage 1	-	-	0	-	574	-
Stage 2	-	-	0	-	744	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	334	737
Mov Cap-2 Maneuver	-	-	-	-	334	-
Stage 1	-	-	-	-	574	-
Stage 2	-	-	-	-	744	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	737	-	-	-
HCM Lane V/C Ratio	0.015	-	-	-
HCM Control Delay (s)	10	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

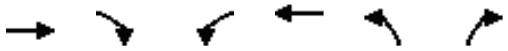
Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	110	528	0	0	538	70	10	0	10	60	0	40
Future Vol, veh/h	110	528	0	0	538	70	10	0	10	60	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	92	92	96	96	92	92	92	96	92	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	115	550	0	0	560	73	11	0	11	63	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	633	0	-	550	0	0	1060	1413	275	1102	-	317
Stage 1	-	-	-	-	-	-	780	780	-	597	-	-
Stage 2	-	-	-	-	-	-	280	633	-	505	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	946	-	0	1016	-	-	178	137	722	166	0	679
Stage 1	-	-	0	-	-	-	354	404	-	456	0	-
Stage 2	-	-	0	-	-	-	703	472	-	518	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	946	-	-	1016	-	-	151	120	722	148	-	679
Mov Cap-2 Maneuver	-	-	-	-	-	-	151	120	-	148	-	-
Stage 1	-	-	-	-	-	-	311	355	-	400	-	-
Stage 2	-	-	-	-	-	-	660	472	-	448	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0	20.8	31.8
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	250	946	-	1016	-	-	148	679
HCM Lane V/C Ratio	0.087	0.121	-	-	-	-	0.422	0.061
HCM Control Delay (s)	20.8	9.3	-	0	-	-	46	10.6
HCM Lane LOS	C	A	-	A	-	-	E	B
HCM 95th %tile Q(veh)	0.3	0.4	-	0	-	-	1.9	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	370	158	200	440	198	230
Future Volume (veh/h)	370	158	200	440	198	230
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	381	163	206	454	204	237
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	802	338	254	1987	475	423
Arrive On Green	0.33	0.33	0.14	0.56	0.27	0.27
Sat Flow, veh/h	2528	1027	1781	3647	1781	1585
Grp Volume(v), veh/h	277	267	206	454	204	237
Grp Sat Flow(s),veh/h/ln	1777	1684	1781	1777	1781	1585
Q Serve(g_s), s	5.7	5.8	5.1	3.0	4.4	5.9
Cycle Q Clear(g_c), s	5.7	5.8	5.1	3.0	4.4	5.9
Prop In Lane		0.61	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	585	554	254	1987	475	423
V/C Ratio(X)	0.47	0.48	0.81	0.23	0.43	0.56
Avail Cap(c_a), veh/h	1123	1064	757	2246	1747	1554
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	12.2	12.3	19.1	5.1	13.9	14.5
Incr Delay (d2), s/veh	2.0	2.2	6.1	0.2	1.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.1	2.3	0.7	1.8	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.3	14.5	25.2	5.3	15.5	17.5
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	544			660	441	
Approach Delay, s/veh	14.4			11.5	16.6	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.5	19.1				29.7	16.2
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	7.1	7.8				5.0	7.9
Green Ext Time (p_c), s	0.4	7.2				6.9	4.4

Intersection Summary	
HCM 6th Ctrl Delay	13.8
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	198	242	50	154	40	296	240	80	40	304	180
Future Volume (veh/h)	160	198	242	50	154	40	296	240	80	40	304	180
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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	165	204	0	52	159	0	305	247	0	41	313	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	781		109	593		369	1291		90	735	
Arrive On Green	0.11	0.22	0.00	0.06	0.17	0.00	0.21	0.36	0.00	0.05	0.21	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	165	204	0	52	159	0	305	247	0	41	313	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.7	2.5	0.0	1.5	2.0	0.0	8.6	2.5	0.0	1.2	4.0	0.0
Cycle Q Clear(g_c), s	4.7	2.5	0.0	1.5	2.0	0.0	8.6	2.5	0.0	1.2	4.0	0.0
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	204	781		109	593		369	1291		90	735	
V/C Ratio(X)	0.81	0.26		0.48	0.27		0.83	0.19		0.46	0.43	
Avail Cap(c_a), veh/h	900	2608		1240	2608		1240	2608		900	2608	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.7	16.9	0.0	23.8	19.1	0.0	19.9	11.4	0.0	24.2	18.1	0.0
Incr Delay (d2), s/veh	7.5	0.5	0.0	3.2	0.6	0.0	4.8	0.2	0.0	3.6	1.0	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	2.2	0.9	0.0	0.7	0.8	0.0	3.6	0.8	0.0	0.5	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	17.4	0.0	27.0	19.7	0.0	24.7	11.6	0.0	27.8	19.1	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		369	A		211	A		552	A		354	A
Approach Delay, s/veh		23.1			21.5			18.8			20.1	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.6	23.1	7.2	15.5	14.9	14.9	10.0	12.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	13.2	4.5	3.5	4.5	10.6	6.0	6.7	4.0
Green Ext Time (p_c), s	0.1	3.4	0.1	2.7	0.9	4.3	0.4	2.1

Intersection Summary	
HCM 6th Ctrl Delay	20.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	550	1395	273	670	0	1350	0	382	0	0	0
Future Volume (veh/h)	30	550	1395	273	670	0	1350	0	382	0	0	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1845	1900	1845	1900
Adj Flow Rate, veh/h	31	567	0	281	691	0	1392	0	0	0	0	0
Adj No. of Lanes	1	2	1	1	3	0	2	0	1	0	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	43	794	355	326	1951	0	1560	0	696	0	2	0
Arrive On Green	0.02	0.23	0.00	0.19	0.39	0.00	0.44	0.00	0.00	0.00	0.00	0.00
Sat Flow, veh/h	1757	3505	1568	1757	5202	0	3514	0	1568	0	1845	0
Grp Volume(v), veh/h	31	567	0	281	691	0	1392	0	0	0	0	0
Grp Sat Flow(s),veh/h/ln	1757	1752	1568	1757	1679	0	1757	0	1568	0	1845	0
Q Serve(g_s), s	1.5	12.4	0.0	12.9	8.1	0.0	30.4	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.5	12.4	0.0	12.9	8.1	0.0	30.4	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.00
Lane Grp Cap(c), veh/h	43	794	355	326	1951	0	1560	0	696	0	2	0
V/C Ratio(X)	0.71	0.71	0.00	0.86	0.35	0.00	0.89	0.00	0.00	0.00	0.00	0.00
Avail Cap(c_a), veh/h	131	1093	489	464	2525	0	1601	0	715	0	100	0
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	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	40.4	29.8	0.0	32.9	18.1	0.0	21.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	19.4	2.7	0.0	11.2	0.2	0.0	7.2	0.0	0.0	0.0	0.0	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	0.9	6.3	0.0	7.3	3.8	0.0	16.2	0.0	0.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	59.8	32.4	0.0	44.1	18.4	0.0	28.5	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	E	C		D	B		C					
Approach Vol, veh/h		598			972			1392			0	
Approach Delay, s/veh		33.9			25.8			28.5			0.0	
Approach LOS		C			C			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.5	22.9		41.0	6.1	36.3		0.0
Change Period (Y+Rc), s	4.0	5.0		4.0	3.5	5.0		3.5
Max Green Setting (Gmax), s	22.0	25.0		38.0	6.7	40.8		5.0
Max Q Clear Time (g_c+I1), s	14.9	14.4		32.4	3.5	10.1		0.0
Green Ext Time (p_c), s	0.6	3.4		4.6	0.0	7.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	100	1470	70	360	1279	40	50	10	170	130	10	100
Future Volume (veh/h)	100	1470	70	360	1279	40	50	10	170	130	10	100
Number	5	2	12	1	6	16	7	4	14	3	8	18
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	103	1515	69	371	1319	20	52	10	17	134	10	18
Adj No. of Lanes	1	2	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	121	1546	70	402	2148	961	64	21	35	156	51	92
Arrive On Green	0.07	0.45	0.45	0.23	0.61	0.61	0.04	0.03	0.03	0.09	0.09	0.09
Sat Flow, veh/h	1757	3415	155	1757	3505	1568	1757	615	1045	1757	592	1065
Grp Volume(v), veh/h	103	775	809	371	1319	20	52	0	27	134	0	28
Grp Sat Flow(s),veh/h/ln	1757	1752	1817	1757	1752	1568	1757	0	1660	1757	0	1657
Q Serve(g_s), s	4.7	35.5	35.9	16.9	19.1	0.4	2.4	0.0	1.3	6.1	0.0	1.3
Cycle Q Clear(g_c), s	4.7	35.5	35.9	16.9	19.1	0.4	2.4	0.0	1.3	6.1	0.0	1.3
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.63	1.00		0.64
Lane Grp Cap(c), veh/h	121	793	823	402	2148	961	64	0	56	156	0	143
V/C Ratio(X)	0.85	0.98	0.98	0.92	0.61	0.02	0.82	0.00	0.48	0.86	0.00	0.20
Avail Cap(c_a), veh/h	159	793	823	451	2170	971	166	0	528	172	0	533
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.6	21.9	22.0	30.8	9.8	6.2	39.1	0.0	38.8	36.7	0.0	34.7
Incr Delay (d2), s/veh	27.5	26.5	27.2	23.2	0.8	0.0	21.5	0.0	8.9	30.6	0.0	0.7
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	3.2	22.8	24.0	10.7	9.4	0.2	1.5	0.0	0.7	4.3	0.0	0.6
LnGrp Delay(d),s/veh	65.2	48.4	49.2	54.0	10.6	6.2	60.6	0.0	47.7	67.4	0.0	35.4
LnGrp LOS	E	D	D	D	B	A	E		D	E		D
Approach Vol, veh/h		1687			1710			79			162	
Approach Delay, s/veh		49.8			19.9			56.2			61.8	
Approach LOS		D			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.7	41.0	11.3	6.7	9.6	54.1	7.0	11.1
Change Period (Y+Rc), s	3.5	4.0	3.5	4.0	3.5	4.0	3.5	4.0
Max Green Setting (Gmax), s	21.5	37.0	8.5	26.0	7.9	50.6	8.2	26.3
Max Q Clear Time (g_c+I1), s	8.9	37.9	8.1	3.3	6.7	21.1	4.4	3.3
Green Ext Time (p_c), s	0.3	0.0	0.0	0.1	0.0	19.7	0.0	0.1

Intersection Summary	
HCM 2010 Ctrl Delay	36.5
HCM 2010 LOS	D

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	1033	160	463	616	250	160	80	407	200	130	130
Future Volume (veh/h)	160	1033	160	463	616	250	160	80	407	200	130	130
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.96
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
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	165	1065	150	477	635	219	165	82	-6	206	134	21
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	187	1169	164	504	1432	494	186	147	125	227	191	156
Arrive On Green	0.11	0.38	0.38	0.29	0.56	0.56	0.11	0.08	0.00	0.13	0.10	0.10
Sat Flow, veh/h	1757	3084	434	1757	2559	882	1757	1845	1568	1757	1845	1510
Grp Volume(v), veh/h	165	605	610	477	435	419	165	82	-6	206	134	21
Grp Sat Flow(s),veh/h/ln	1757	1752	1765	1757	1752	1688	1757	1845	1568	1757	1845	1510
Q Serve(g_s), s	11.9	41.9	42.1	34.0	18.6	18.7	11.9	5.5	0.0	14.8	9.0	1.6
Cycle Q Clear(g_c), s	11.9	41.9	42.1	34.0	18.6	18.7	11.9	5.5	0.0	14.8	9.0	1.6
Prop In Lane	1.00		0.25	1.00		0.52	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	187	664	669	504	981	945	186	147	125	227	191	156
V/C Ratio(X)	0.88	0.91	0.91	0.95	0.44	0.44	0.89	0.56	-0.05	0.91	0.70	0.13
Avail Cap(c_a), veh/h	335	684	689	645	993	957	266	346	294	288	369	302
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	37.7	37.8	44.7	16.5	16.6	56.5	56.8	0.0	55.0	55.5	52.2
Incr Delay (d2), s/veh	12.6	16.4	16.6	20.2	0.4	0.5	21.8	3.3	0.0	26.5	4.7	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	6.4	23.2	23.6	19.4	9.1	8.8	6.9	2.9	0.0	8.9	4.8	0.7
LnGrp Delay(d),s/veh	69.1	54.1	54.5	64.9	17.0	17.1	78.3	60.0	0.0	81.5	60.2	52.6
LnGrp LOS	E	D	D	E	B	B	E	E		F	E	D
Approach Vol, veh/h		1380			1331			241			361	
Approach Delay, s/veh		56.0			34.2			74.0			71.9	
Approach LOS		E			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.8	52.6	20.5	14.2	17.6	75.7	17.5	17.2
Change Period (Y+Rc), s	3.5	4.5	3.5	4.0	3.5	4.5	3.5	4.0
Max Green Setting (Gmax), s	7.5	49.5	21.5	24.0	24.9	72.1	19.9	25.6
Max Q Clear Time (g_c+I1), s	3.0	44.1	16.8	7.5	13.9	20.7	13.9	11.0
Green Ext Time (p_c), s	1.2	4.0	0.2	0.3	0.3	9.9	0.2	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	50.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	57	140	111	80	176	80	252	39	155	257	210
Future Volume (veh/h)	230	57	140	111	80	176	80	252	39	155	257	210
Number	3	8	18	7	4	14	5	2	12	1	6	16
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		0.99	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
Adj Sat Flow, veh/h/ln	1900	1845	1900	1900	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	237	59	126	114	82	138	82	260	28	160	265	80
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	431	105	160	283	199	243	113	616	66	185	624	184
Arrive On Green	0.36	0.36	0.38	0.36	0.36	0.38	0.06	0.19	0.19	0.11	0.23	0.23
Sat Flow, veh/h	749	290	443	405	549	672	1757	3192	341	1757	2666	788
Grp Volume(v), veh/h	422	0	0	334	0	0	82	142	146	160	172	173
Grp Sat Flow(s),veh/h/ln	1482	0	0	1626	0	0	1757	1752	1780	1757	1752	1702
Q Serve(g_s), s	2.8	0.0	0.0	0.0	0.0	0.0	1.6	2.5	2.6	3.2	3.0	3.1
Cycle Q Clear(g_c), s	8.2	0.0	0.0	5.4	0.0	0.0	1.6	2.5	2.6	3.2	3.0	3.1
Prop In Lane	0.56		0.30	0.34		0.41	1.00		0.19	1.00		0.46
Lane Grp Cap(c), veh/h	696	0	0	726	0	0	113	338	344	185	410	398
V/C Ratio(X)	0.61	0.00	0.00	0.46	0.00	0.00	0.73	0.42	0.43	0.87	0.42	0.43
Avail Cap(c_a), veh/h	1524	0	0	1640	0	0	398	1041	1058	447	1091	1059
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	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.5	0.0	0.0	8.8	0.0	0.0	16.2	12.5	12.5	15.6	11.5	11.5
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.5	0.0	0.0	8.7	1.2	1.2	11.5	1.0	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	3.7	0.0	0.0	2.6	0.0	0.0	1.0	1.3	1.4	2.1	1.5	1.6
LnGrp Delay(d),s/veh	10.4	0.0	0.0	9.3	0.0	0.0	24.9	13.7	13.7	27.0	12.5	12.6
LnGrp LOS	B			A			C	B	B	C	B	B
Approach Vol, veh/h		422			334			370			505	
Approach Delay, s/veh		10.4			9.3			16.2			17.1	
Approach LOS		B			A			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.7	10.8		16.8	6.3	12.3		16.8
Change Period (Y+Rc), s	3.5	4.0		3.5	3.5	4.0		3.5
Max Green Setting (Gmax), s	9.5	21.0		35.5	8.5	22.0		35.5
Max Q Clear Time (g_c+I1), s	5.2	4.6		7.4	3.6	5.1		10.2
Green Ext Time (p_c), s	0.2	2.0		2.4	0.1	2.5		3.2

Intersection Summary		
HCM 2010 Ctrl Delay		13.6
HCM 2010 LOS		B

Notes

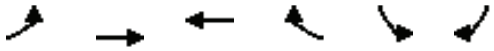
Intersection	
Int Delay, s/veh	33.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	27	100	135	26	103	70	238	248	88	340	80
Future Vol, veh/h	30	27	100	135	26	103	70	238	248	88	340	80
Conflicting Peds, #/hr	1	0	1	1	0	1	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	100	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	97	97	97	97	97	97	97	97	97
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	31	28	103	139	27	106	72	245	256	91	351	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	855	1221	218	892	1134	254	433	0	0	503	0	0
Stage 1	574	574	-	519	519	-	-	-	-	-	-	-
Stage 2	281	647	-	373	615	-	-	-	-	-	-	-
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	250	177	783	235	200	742	1116	-	-	1051	-	-
Stage 1	469	499	-	505	528	-	-	-	-	-	-	-
Stage 2	699	462	-	617	478	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	168	151	782	156	170	740	1116	-	-	1049	-	-
Mov Cap-2 Maneuver	168	151	-	156	170	-	-	-	-	-	-	-
Stage 1	439	456	-	472	493	-	-	-	-	-	-	-
Stage 2	529	431	-	459	436	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.7	166.3	1.1	1.5
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1116	-	-	324	228	1049	-	-
HCM Lane V/C Ratio	0.065	-	-	0.5	1.194	0.086	-	-
HCM Control Delay (s)	8.4	-	-	26.7	166.3	8.8	-	-
HCM Lane LOS	A	-	-	D	F	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.6	13.2	0.3	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	233	311	191	323	273	302
Future Volume (vph)	233	311	191	323	273	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	0.95		0.97	0.91
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.91		0.95	0.85
Flt Protected	0.95	1.00	1.00		0.97	1.00
Satd. Flow (prot)	1752	3505	3175		3298	1427
Flt Permitted	0.95	1.00	1.00		0.97	1.00
Satd. Flow (perm)	1752	3505	3175		3298	1427
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	240	321	197	333	281	311
RTOR Reduction (vph)	0	0	244	0	48	144
Lane Group Flow (vph)	240	321	286	0	357	43
Confl. Peds. (#/hr)					1	
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					4	4
Actuated Green, G (s)	11.7	27.6	12.4		10.7	10.7
Effective Green, g (s)	11.2	27.6	12.4		10.7	10.7
Actuated g/C Ratio	0.24	0.60	0.27		0.23	0.23
Clearance Time (s)	3.5	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	5.0	5.0		3.0	3.0
Lane Grp Cap (vph)	423	2089	850		762	329
v/s Ratio Prot	c0.14	0.09	c0.09			
v/s Ratio Perm					c0.11	0.03
v/c Ratio	0.57	0.15	0.34		0.47	0.13
Uniform Delay, d1	15.4	4.2	13.6		15.3	14.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	1.7	0.1	0.5		0.5	0.2
Delay (s)	17.2	4.2	14.1		15.8	14.3
Level of Service	B	A	B		B	B
Approach Delay (s)		9.8	14.1		15.3	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	46.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	546	80	0	817	60	150
Future Vol, veh/h	546	80	0	817	60	150
Conflicting Peds, #/hr	0	2	2	0	4	3
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	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	563	82	0	842	62	155

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	1031	328
Stage 1	-	-	-	-	606	-
Stage 2	-	-	-	-	425	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	0	-	229	668
Stage 1	-	-	0	-	507	-
Stage 2	-	-	0	-	627	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	228	665
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	625	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	21.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	430	-	-	-
HCM Lane V/C Ratio	0.503	-	-	-
HCM Control Delay (s)	21.6	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	2.8	-	-	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	565	31	26	587	50	12
Future Volume (veh/h)	565	31	26	587	50	12
Number	4	14	3	8	5	12
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
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	614	34	28	638	54	13
Adj No. of Lanes	2	0	1	2	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1415	78	61	2144	100	24
Arrive On Green	0.42	0.42	0.03	0.61	0.07	0.07
Sat Flow, veh/h	3470	187	1757	3597	1365	329
Grp Volume(v), veh/h	318	330	28	638	68	0
Grp Sat Flow(s),veh/h/ln	1752	1812	1757	1752	1718	0
Q Serve(g_s), s	3.7	3.7	0.4	2.5	1.1	0.0
Cycle Q Clear(g_c), s	3.7	3.7	0.4	2.5	1.1	0.0
Prop In Lane		0.10	1.00		0.79	0.19
Lane Grp Cap(c), veh/h	734	759	61	2144	125	0
V/C Ratio(X)	0.43	0.43	0.46	0.30	0.54	0.00
Avail Cap(c_a), veh/h	1136	1175	339	3500	452	0
HCM Platoon Ratio	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	0.00
Uniform Delay (d), s/veh	5.9	5.9	13.5	2.6	12.8	0.0
Incr Delay (d2), s/veh	0.4	0.4	5.2	0.1	3.6	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	1.9	1.9	0.3	1.2	0.6	0.0
LnGrp Delay(d),s/veh	6.3	6.3	18.7	2.7	16.4	0.0
LnGrp LOS	A	A	B	A	B	
Approach Vol, veh/h	648			666	68	
Approach Delay, s/veh	6.3			3.4	16.4	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		6.6	5.5	16.5				22.0
Change Period (Y+Rc), s		4.5	4.5	4.5				4.5
Max Green Setting (Gmax), s		7.5	5.5	18.5				28.5
Max Q Clear Time (g_c+I1), s		3.1	2.4	5.7				4.5
Green Ext Time (p_c), s		0.0	0.0	6.3				8.6

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	547	30	0	613	0	12
Future Vol, veh/h	547	30	0	613	0	12
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	595	33	0	666	0	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	944	314
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	-	-	6.86	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.86	-
Follow-up Hdwy	-	-	-	-	3.53	3.33
Pot Cap-1 Maneuver	-	-	0	-	259	679
Stage 1	-	-	0	-	501	-
Stage 2	-	-	0	-	695	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	259	679
Mov Cap-2 Maneuver	-	-	-	-	259	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	695	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	679	-	-	-
HCM Lane V/C Ratio	0.019	-	-	-
HCM Control Delay (s)	10.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

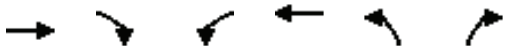
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	476	0	10	593	80	10	10	10	50	0	40
Future Vol, veh/h	130	476	0	10	593	80	10	10	10	50	0	40
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	100	-	-	-	-	-	-	-	-	0	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	92	92	95	95	92	92	92	95	92	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	137	501	0	11	624	84	11	11	11	53	0	42

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	708	0	-	501	0	0	1109	1505	251	1218	-	354
Stage 1	-	-	-	-	-	-	775	775	-	688	-	-
Stage 2	-	-	-	-	-	-	334	730	-	530	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	-	3.32
Pot Cap-1 Maneuver	887	-	0	1059	-	-	164	120	749	136	0	642
Stage 1	-	-	0	-	-	-	357	406	-	403	0	-
Stage 2	-	-	0	-	-	-	653	426	-	500	0	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	887	-	-	1059	-	-	133	100	749	107	-	642
Mov Cap-2 Maneuver	-	-	-	-	-	-	133	100	-	107	-	-
Stage 1	-	-	-	-	-	-	302	343	-	341	-	-
Stage 2	-	-	-	-	-	-	600	419	-	403	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.2	33.4	42.4
HCM LOS			D	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	159	887	-	1059	-	-	107	642
HCM Lane V/C Ratio	0.205	0.154	-	0.01	-	-	0.492	0.066
HCM Control Delay (s)	33.4	9.8	-	8.4	0.1	-	67.6	11
HCM Lane LOS	D	A	-	A	A	-	F	B
HCM 95th %tile Q(veh)	0.7	0.5	-	0	-	-	2.2	0.2



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	347	149	180	423	200	250
Future Volume (veh/h)	347	149	180	423	200	250
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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	369	159	191	450	213	266
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	775	329	235	1910	516	459
Arrive On Green	0.32	0.32	0.13	0.54	0.29	0.29
Sat Flow, veh/h	2524	1031	1781	3647	1781	1585
Grp Volume(v), veh/h	268	260	191	450	213	266
Grp Sat Flow(s),veh/h/ln	1777	1685	1781	1777	1781	1585
Q Serve(g_s), s	5.6	5.7	4.8	3.1	4.5	6.6
Cycle Q Clear(g_c), s	5.6	5.7	4.8	3.1	4.5	6.6
Prop In Lane		0.61	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	567	537	235	1910	516	459
V/C Ratio(X)	0.47	0.48	0.81	0.24	0.41	0.58
Avail Cap(c_a), veh/h	1114	1056	751	2227	1732	1542
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	12.6	12.7	19.5	5.7	13.3	14.0
Incr Delay (d2), s/veh	2.1	2.3	6.6	0.2	1.4	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	2.1	2.2	0.8	1.8	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.7	15.0	26.1	5.9	14.6	17.0
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	528			641	479	
Approach Delay, s/veh	14.9			11.9	16.0	
Approach LOS	B			B	B	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	10.1	18.8				28.9	17.4
Change Period (Y+Rc), s	3.5	4.0				4.0	4.0
Max Green Setting (Gmax), s	20.0	29.0				29.0	45.0
Max Q Clear Time (g_c+I1), s	6.8	7.7				5.1	8.6
Green Ext Time (p_c), s	0.4	7.0				6.8	4.8

Intersection Summary	
HCM 6th Ctrl Delay	14.0
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	170	189	228	40	165	70	268	300	60	40	312	170
Future Volume (veh/h)	170	189	228	40	165	70	268	300	60	40	312	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	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	177	197	0	42	172	0	279	312	0	42	325	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	219	846		92	592		340	1258		92	764	
Arrive On Green	0.12	0.24	0.00	0.05	0.17	0.00	0.19	0.35	0.00	0.05	0.21	0.00
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	177	197	0	42	172	0	279	312	0	42	325	0
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	5.1	2.3	0.0	1.2	2.2	0.0	7.9	3.3	0.0	1.2	4.1	0.0
Cycle Q Clear(g_c), s	5.1	2.3	0.0	1.2	2.2	0.0	7.9	3.3	0.0	1.2	4.1	0.0
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	219	846		92	592		340	1258		92	764	
V/C Ratio(X)	0.81	0.23		0.46	0.29		0.82	0.25		0.46	0.43	
Avail Cap(c_a), veh/h	899	2607		1239	2607		1239	2607		899	2607	
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	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.4	16.1	0.0	24.2	19.2	0.0	20.4	12.0	0.0	24.2	17.8	0.0
Incr Delay (d2), s/veh	7.0	0.4	0.0	3.5	0.7	0.0	4.9	0.3	0.0	3.5	1.0	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	2.3	0.9	0.0	0.6	0.9	0.0	3.3	1.1	0.0	0.6	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.4	16.5	0.0	27.7	19.9	0.0	25.3	12.3	0.0	27.7	18.8	0.0
LnGrp LOS	C	B		C	B		C	B		C	B	
Approach Vol, veh/h		374	A		214	A		591	A		367	A
Approach Delay, s/veh		22.6			21.4			18.4			19.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	22.6	6.7	16.5	14.0	15.3	10.4	12.7
Change Period (Y+Rc), s	3.5	4.5	3.5	4.5	3.5	4.5	3.5	4.5
Max Green Setting (Gmax), s	27.0	38.0	37.0	38.0	37.0	38.0	27.0	38.0
Max Q Clear Time (g_c+I1), s	3.2	5.3	3.2	4.3	9.9	6.1	7.1	4.2
Green Ext Time (p_c), s	0.1	4.3	0.1	2.6	0.8	4.5	0.4	2.2

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, EBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Appendix C:
SimTraffic Worksheets



Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	159	142	89.3%	5.0	1.2	A
	Right Turn	91	87	95.6%	3.4	0.5	A
	Subtotal	250	229	91.6%	4.5	1.0	A
SB	Left Turn	42	37	88.6%	9.8	1.9	A
	Through	152	161	105.9%	1.6	0.5	A
	Right Turn						
	Subtotal	194	198	102.2%	3.4	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	81	83	102.8%	8.6	1.4	A
	Through						
	Right Turn	37	40	107.8%	3.6	0.7	A
	Subtotal	118	123	104.4%	7.0	1.2	A
Total		562	550	97.9%	4.7	0.6	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	244	222	90.8%	1.3	0.4	A
	Right Turn	28	26	92.9%	1.3	0.7	A
	Subtotal	272	248	91.0%	1.3	0.4	A
SB	Left Turn						
	Through	233	241	103.5%	0.7	0.1	A
	Right Turn						
	Subtotal	233	241	103.5%	0.7	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	6	7	123.3%	2.4	1.7	A
	Subtotal	6	7	123.3%	2.4	1.7	A
Total		511	496	97.1%	1.0	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	258	233	90.4%	6.6	1.0	A
	Right Turn	114	105	91.8%	5.2	0.7	A
	Subtotal	372	338	90.8%	6.2	0.9	A
SB	Left Turn	36	34	93.3%	14.1	4.9	B
	Through	197	207	105.2%	2.6	0.5	A
	Right Turn						
	Subtotal	233	241	103.4%	4.2	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	132	132	99.7%	12.4	2.9	B
	Through						
	Right Turn	14	15	106.4%	3.5	4.0	A
	Subtotal	146	147	100.3%	11.6	3.1	B
Total		751	725	96.6%	6.6	0.9	A

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	335	310	92.5%	11.7	0.5	B
	Right Turn	67	62	93.1%	8.1	1.0	A
	Subtotal	402	372	92.6%	11.2	0.4	B
SB	Left Turn	45	47	105.1%	6.1	0.9	A
	Through	284	290	102.0%	8.6	0.4	A
	Right Turn						
	Subtotal	329	337	102.5%	8.3	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	133	130	98.0%	6.2	0.8	A
	Through						
	Right Turn	37	38	102.7%	3.8	0.9	A
	Subtotal	170	168	99.1%	5.7	0.6	A
Total		901	878	97.4%	9.0	0.2	A

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	174	151	87.0%	7.2	1.1	A
	Through	449	404	90.0%	2.3	0.2	A
	Right Turn	92	85	91.8%	2.0	0.6	A
	Subtotal	715	640	89.5%	3.5	0.3	A
SB	Left Turn						
	Through	362	368	101.7%	0.9	0.2	A
	Right Turn	86	91	105.3%	0.3	0.1	A
	Subtotal	448	459	102.4%	0.8	0.2	A
EB	Left Turn						
	Through						
	Right Turn	614	617	100.5%	1.6	0.2	A
	Subtotal	614	617	100.5%	1.6	0.2	A
WB	Left Turn						
	Through						
	Right Turn	14	15	110.0%	4.3	1.5	A
	Subtotal	14	15	110.0%	4.3	1.5	A
Total		1,791	1,731	96.6%	2.1	0.2	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	122	119	97.1%	51.4	7.4	D
	Through						
	Right Turn	270	276	102.3%	54.8	10.0	D
	Subtotal	392	395	100.7%	53.7	9.1	D
SB	Left Turn	130	132	101.4%	54.2	5.5	D
	Through	122	125	102.4%	46.3	7.3	D
	Right Turn	121	117	96.8%	19.8	2.0	B
	Subtotal	373	374	100.2%	39.5	4.2	D
EB	Left Turn	172	95	55.2%	214.6	42.7	F
	Through	340	207	60.8%	150.8	37.7	F
	Right Turn	317	232	73.2%	13.4	9.9	B
	Subtotal	829	534	64.4%	95.0	21.8	F
WB	Left Turn	289	289	100.0%	47.5	3.3	D
	Through	904	912	100.8%	27.7	2.4	C
	Right Turn	172	173	100.3%	28.2	3.7	C
	Subtotal	1,365	1,373	100.6%	31.5	1.6	C
Total		2,959	2,675	90.4%	95.3	8.9	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	3	80.0%	23.5	31.2	C
	Through	227	232	102.1%	44.2	3.6	D
	Right Turn	84	84	99.6%	5.9	0.9	A
	Subtotal	315	319	101.1%	33.6	3.8	C
SB	Left Turn	110	109	99.0%	48.1	5.1	D
	Through						
	Right Turn	866	867	100.1%	22.2	2.6	C
	Subtotal	976	976	100.0%	24.8	2.5	C
EB	Left Turn	316	236	74.7%	46.8	4.6	D
	Through	275	221	80.4%	7.5	1.8	A
	Right Turn						
	Subtotal	591	457	77.4%	28.7	3.5	C
WB	Left Turn						
	Through	495	515	104.1%	26.7	4.1	C
	Right Turn	172	173	100.6%	18.3	4.5	B
	Subtotal	667	688	103.2%	24.6	4.1	C
Total		2,549	2,440	95.7%	26.5	1.3	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	142	146	103.0%	17.9	2.1	B
	Through	1	1	120.0%	5.5	9.7	A
	Right Turn	92	98	106.2%	4.7	1.0	A
	Subtotal	235	245	104.3%	12.5	1.7	B
SB	Left Turn						
	Through						
	Right Turn	3	3	90.0%	2.8	2.8	A
	Subtotal	3	3	90.0%	2.8	2.8	A
EB	Left Turn	16	13	78.1%	33.8	7.3	C
	Through	371	347	93.5%	9.8	1.6	A
	Right Turn	125	103	82.2%	6.4	1.2	A
	Subtotal	512	462	90.3%	9.5	1.4	A
WB	Left Turn	118	119	101.2%	18.4	2.2	B
	Through	573	583	101.7%	4.8	0.9	A
	Right Turn	1	2	150.0%	1.0	2.3	A
	Subtotal	692	703	101.6%	7.1	0.9	A
Total		1,442	1,413	98.0%	8.9	0.9	A

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	275	272	98.9%	7.3	1.3	A
	Right Turn	188	183	97.3%	5.7	1.1	A
	Subtotal	463	455	98.3%	6.7	1.2	A
SB	Left Turn	52	50	96.2%	16.6	5.1	B
	Through	327	327	99.8%	4.3	0.8	A
	Right Turn						
	Subtotal	379	377	99.3%	6.0	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	192	193	100.5%	12.9	2.2	B
	Through						
	Right Turn	68	70	102.4%	3.3	1.2	A
	Subtotal	260	263	101.0%	10.7	1.8	B
Total		1,102	1,094	99.3%	7.4	0.9	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	455	449	98.6%	2.2	0.4	A
	Right Turn	42	44	104.8%	2.1	0.8	A
	Subtotal	497	493	99.1%	2.2	0.4	A
SB	Left Turn						
	Through	519	520	100.1%	1.2	0.1	A
	Right Turn						
	Subtotal	519	520	100.1%	1.2	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	8	8	93.8%	3.0	2.3	A
	Subtotal	8	8	93.8%	3.0	2.3	A
Total		1,024	1,020	99.6%	1.7	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	472	481	101.8%	10.5	1.7	B
	Right Turn	262	267	102.0%	9.0	2.0	A
	Subtotal	734	748	101.9%	10.0	1.8	A
SB	Left Turn	41	37	89.5%	30.9	9.8	C
	Through	478	484	101.3%	8.9	1.2	A
	Right Turn						
	Subtotal	519	521	100.4%	10.5	1.2	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	381	377	98.9%	23.9	4.3	C
	Through						
	Right Turn	25	28	110.4%	3.9	1.9	A
	Subtotal	406	405	99.6%	22.6	3.8	C
Total		1,659	1,673	100.9%	13.1	1.5	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	671	691	102.9%	18.0	2.2	C
	Right Turn	62	61	97.7%	16.5	3.9	C
	Subtotal	733	751	102.5%	17.8	2.3	C
SB	Left Turn	90	91	101.2%	11.2	1.9	B
	Through	769	777	101.1%	13.6	1.1	B
	Right Turn						
	Subtotal	859	868	101.1%	13.3	1.2	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	161	162	100.3%	13.0	4.5	B
	Through						
	Right Turn	63	59	94.3%	6.0	1.6	A
	Subtotal	224	221	98.6%	11.1	3.8	B
Total		1,816	1,841	101.4%	14.9	1.5	B

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	197	199	100.8%	47.7	23.8	E
	Through	747	754	100.9%	3.0	0.5	A
	Right Turn	123	122	99.2%	2.2	0.3	A
	Subtotal	1,067	1,074	100.7%	11.7	4.9	B
SB	Left Turn						
	Through	891	900	101.0%	1.6	0.3	A
	Right Turn	92	94	102.4%	0.9	0.3	A
	Subtotal	983	994	101.1%	1.5	0.2	A
EB	Left Turn						
	Through						
	Right Turn	420	418	99.5%	1.1	0.1	A
	Subtotal	420	418	99.5%	1.1	0.1	A
WB	Left Turn						
	Through						
	Right Turn	17	17	100.0%	6.2	4.0	A
	Subtotal	17	17	100.0%	6.2	4.0	A
Total		2,487	2,503	100.6%	5.7	1.9	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	122	119	97.8%	40.3	8.6	D
	Through						
	Right Turn	207	210	101.6%	45.9	8.1	D
	Subtotal	329	330	100.2%	43.9	7.6	D
SB	Left Turn	116	120	103.0%	35.4	4.9	D
	Through	109	112	102.3%	33.5	8.8	C
	Right Turn	66	68	103.6%	13.5	3.0	B
	Subtotal	291	299	102.9%	29.4	4.2	C
EB	Left Turn	65	62	94.8%	37.3	6.7	D
	Through	683	688	100.8%	25.2	2.0	C
	Right Turn	434	442	101.8%	11.2	1.8	B
	Subtotal	1,182	1,192	100.8%	20.6	1.4	C
WB	Left Turn	409	401	98.1%	44.0	5.3	D
	Through	970	945	97.5%	31.8	7.0	C
	Right Turn	177	176	99.2%	33.0	8.7	C
	Subtotal	1,556	1,522	97.8%	35.2	6.1	D
Total		3,358	3,343	99.5%	31.7	3.4	C

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	336	333	99.1%	38.3	3.5	D
	Right Turn	114	118	103.2%	7.5	1.1	A
	Subtotal	450	451	100.2%	30.2	2.6	C
SB	Left Turn	179	177	99.1%	46.2	4.8	D
	Through						
	Right Turn	1,132	1,118	98.8%	15.8	1.1	B
	Subtotal	1,311	1,295	98.8%	19.9	1.3	B
EB	Left Turn	507	517	102.0%	45.4	7.3	D
	Through	412	421	102.3%	15.7	2.2	B
	Right Turn						
	Subtotal	919	938	102.1%	32.3	5.0	C
WB	Left Turn						
	Through	424	418	98.6%	37.4	5.2	D
	Right Turn	224	223	99.6%	27.6	5.9	C
	Subtotal	648	641	99.0%	34.0	5.1	C
Total		3,328	3,326	99.9%	27.6	2.3	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	205	199	97.0%	18.1	1.9	B
	Through						
	Right Turn	55	57	103.3%	4.6	1.1	A
	Subtotal	260	256	98.3%	14.8	1.3	B
SB	Left Turn	1	1	60.0%	0.3	0.9	A
	Through	2	2	85.0%	14.1	16.6	B
	Right Turn	7	6	84.3%	4.7	4.2	A
	Subtotal	10	8	82.0%	11.0	6.3	B
EB	Left Turn	16	16	98.1%	18.6	7.6	B
	Through	492	510	103.6%	9.5	1.5	A
	Right Turn	160	162	101.4%	7.9	2.2	A
	Subtotal	668	688	102.9%	9.4	1.5	A
WB	Left Turn	46	46	100.7%	21.4	1.9	C
	Through	433	425	98.1%	6.7	1.3	A
	Right Turn	6	6	101.7%	3.9	6.7	A
	Subtotal	485	477	98.4%	8.0	1.2	A
Total		1,423	1,429	100.4%	9.9	0.9	A

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	347	350	101.0%	9.8	1.6	A
	Right Turn	223	221	98.9%	7.7	1.7	A
	Subtotal	570	571	100.2%	9.0	1.3	A
SB	Left Turn	67	64	95.4%	17.7	3.9	B
	Through	332	332	100.0%	4.8	1.1	A
	Right Turn						
	Subtotal	399	396	99.2%	6.8	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	238	227	95.4%	14.0	1.6	B
	Through						
	Right Turn	88	89	100.8%	4.0	0.6	A
	Subtotal	326	316	96.8%	11.1	1.2	B
Total		1,295	1,283	99.0%	8.9	0.7	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	555	556	100.2%	2.3	0.2	A
	Right Turn	27	27	101.1%	2.3	0.6	A
	Subtotal	582	584	100.3%	2.3	0.2	A
SB	Left Turn						
	Through	570	559	98.1%	1.3	0.1	A
	Right Turn						
	Subtotal	570	559	98.1%	1.3	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	15	17	114.0%	5.4	3.2	A
	Subtotal	15	17	114.0%	5.4	3.2	A
Total		1,167	1,160	99.4%	1.9	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	543	559	102.9%	14.7	1.8	B
	Right Turn	266	259	97.4%	12.1	2.5	B
	Subtotal	809	818	101.1%	14.0	1.7	B
SB	Left Turn	78	79	101.5%	30.6	3.8	C
	Through	492	479	97.4%	8.6	1.2	A
	Right Turn						
	Subtotal	570	559	98.0%	12.1	1.3	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	367	358	97.4%	25.7	4.5	C
	Through						
	Right Turn	39	40	103.6%	5.1	2.3	A
	Subtotal	406	398	98.0%	23.6	4.5	C
Total		1,785	1,774	99.4%	15.6	1.7	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	729	741	101.6%	19.9	4.2	C
	Right Turn	74	72	96.9%	18.3	6.2	C
	Subtotal	803	813	101.2%	19.7	4.3	C
SB	Left Turn	85	84	98.7%	11.2	1.4	B
	Through	774	769	99.4%	14.8	1.6	B
	Right Turn						
	Subtotal	859	853	99.3%	14.4	1.5	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	205	205	99.9%	18.9	17.3	C
	Through						
	Right Turn	80	76	95.1%	10.2	8.9	B
	Subtotal	285	281	98.6%	16.6	15.3	C
Total		1,947	1,947	100.0%	17.1	4.7	C

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	211	213	101.1%	43.5	18.9	E
	Through	790	787	99.6%	3.2	0.6	A
	Right Turn	137	139	101.3%	2.1	0.2	A
	Subtotal	1,138	1,139	100.1%	10.9	4.3	B
SB	Left Turn						
	Through	921	917	99.5%	1.7	0.3	A
	Right Turn	111	113	101.5%	1.0	0.2	A
	Subtotal	1,032	1,029	99.7%	1.6	0.2	A
EB	Left Turn						
	Through						
	Right Turn	450	445	98.8%	1.2	0.2	A
	Subtotal	450	445	98.8%	1.2	0.2	A
WB	Left Turn						
	Through						
	Right Turn	31	32	102.9%	7.3	2.3	A
	Subtotal	31	32	102.9%	7.3	2.3	A
Total		2,651	2,645	99.8%	5.7	1.9	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	164	167	101.7%	46.5	7.5	D
	Through						
	Right Turn	196	197	100.7%	43.2	7.0	D
	Subtotal	360	364	101.1%	44.8	6.4	D
SB	Left Turn	163	172	105.3%	62.0	18.1	E
	Through	165	170	102.8%	54.4	14.9	D
	Right Turn	97	97	99.6%	20.2	8.8	C
	Subtotal	425	438	103.0%	50.5	14.9	D
EB	Left Turn	75	76	100.7%	57.0	6.5	E
	Through	777	768	98.9%	29.8	2.3	C
	Right Turn	607	613	101.0%	15.8	3.2	B
	Subtotal	1,459	1,457	99.9%	25.5	2.0	C
WB	Left Turn	409	401	98.1%	48.8	5.2	D
	Through	970	958	98.8%	34.5	3.9	C
	Right Turn	186	186	100.2%	34.9	5.4	C
	Subtotal	1,565	1,546	98.8%	38.5	3.1	D
Total		3,809	3,805	99.9%	36.2	3.0	D

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	339	346	102.0%	43.2	4.4	D
	Right Turn	173	181	104.7%	11.6	2.0	B
	Subtotal	512	527	102.9%	31.6	3.7	C
SB	Left Turn	232	222	95.5%	52.7	3.7	D
	Through						
	Right Turn	1,139	1,122	98.5%	20.0	1.6	B
	Subtotal	1,371	1,344	98.0%	25.2	1.2	C
EB	Left Turn	528	526	99.5%	37.2	6.3	D
	Through	574	577	100.5%	9.3	1.0	A
	Right Turn						
	Subtotal	1,102	1,102	100.0%	22.2	3.4	C
WB	Left Turn						
	Through	426	435	102.2%	32.6	3.4	C
	Right Turn	271	265	97.7%	26.1	4.1	C
	Subtotal	697	700	100.4%	30.2	3.5	C
Total		3,682	3,673	99.8%	26.2	2.2	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	257	252	98.0%	22.4	3.4	C
	Through						
	Right Turn	98	98	99.5%	6.8	2.1	A
	Subtotal	355	349	98.4%	17.9	2.7	B
SB	Left Turn	2	1	50.0%	5.4	10.7	A
	Through	4	4	97.5%	15.9	16.7	B
	Right Turn	7	7	92.9%	3.3	2.4	A
	Subtotal	13	11	87.7%	13.0	9.7	B
EB	Left Turn	25	20	79.2%	27.6	9.5	C
	Through	736	750	101.8%	11.4	1.5	B
	Right Turn	175	181	103.5%	9.2	1.6	A
	Subtotal	936	950	101.5%	11.3	1.4	B
WB	Left Turn	51	51	100.0%	25.1	6.6	C
	Through	414	412	99.4%	6.6	1.2	A
	Right Turn	1	1	140.0%	0.3	1.0	A
	Subtotal	466	464	99.6%	8.8	1.3	A
Total		1,770	1,775	100.3%	11.9	1.1	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	409	411	100.4%	14.9	3.6	B
	Right Turn	206	208	100.7%	11.4	2.6	B
	Subtotal	615	618	100.5%	13.7	3.2	B
SB	Left Turn	116	115	98.9%	21.7	2.4	C
	Through	417	407	97.5%	6.0	1.3	A
	Right Turn						
	Subtotal	533	521	97.8%	9.6	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	236	240	101.5%	16.6	1.9	B
	Through						
	Right Turn	127	124	97.9%	3.9	0.7	A
	Subtotal	363	364	100.2%	12.2	1.5	B
Total		1,511	1,503	99.5%	11.8	1.6	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	601	605	100.7%	2.7	0.3	A
	Right Turn	44	43	98.4%	3.1	0.4	A
	Subtotal	645	649	100.6%	2.7	0.3	A
SB	Left Turn						
	Through	653	646	98.9%	1.5	0.3	A
	Right Turn						
	Subtotal	653	646	98.9%	1.5	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	14	14	101.4%	5.0	3.5	A
	Subtotal	14	14	101.4%	5.0	3.5	A
Total		1,312	1,309	99.7%	2.1	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	615	621	101.0%	23.3	13.3	C
	Right Turn	330	333	101.0%	23.8	14.6	C
	Subtotal	945	955	101.0%	23.4	13.7	C
SB	Left Turn	83	85	101.9%	34.3	3.2	C
	Through	570	564	98.9%	10.3	1.0	B
	Right Turn						
	Subtotal	653	648	99.3%	13.2	1.2	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	475	457	96.1%	40.0	10.2	D
	Through						
	Right Turn	30	31	101.7%	5.2	2.2	A
	Subtotal	505	487	96.5%	37.9	9.7	D
Total		2,103	2,090	99.4%	23.8	7.1	C

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	868	869	100.1%	25.8	3.3	D
	Right Turn	39	39	98.7%	23.3	6.1	C
	Subtotal	907	908	100.1%	25.6	3.4	D
SB	Left Turn	113	114	101.2%	13.2	1.5	B
	Through	932	904	97.0%	19.4	1.8	C
	Right Turn						
	Subtotal	1,045	1,019	97.5%	18.7	1.5	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	152	155	102.0%	18.5	4.8	C
	Through						
	Right Turn	77	82	106.6%	7.6	1.9	A
	Subtotal	229	237	103.5%	15.0	3.7	B
Total		2,181	2,163	99.2%	21.1	2.0	C

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	183	178	97.5%	68.5	32.9	F
	Through	925	929	100.4%	3.7	0.7	A
	Right Turn	159	158	99.1%	2.7	0.3	A
	Subtotal	1,267	1,265	99.9%	13.2	6.2	B
SB	Left Turn						
	Through	981	959	97.7%	1.7	0.2	A
	Right Turn	94	91	96.5%	0.9	0.3	A
	Subtotal	1,075	1,050	97.6%	1.6	0.2	A
EB	Left Turn						
	Through						
	Right Turn	443	441	99.5%	1.2	0.2	A
	Subtotal	443	441	99.5%	1.2	0.2	A
WB	Left Turn						
	Through						
	Right Turn	28	27	95.7%	11.6	5.1	B
	Subtotal	28	27	95.7%	11.6	5.1	B
Total		2,813	2,783	98.9%	7.1	3.0	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	134	134	99.9%	47.6	11.9	D
	Through						
	Right Turn	205	205	100.0%	51.0	9.9	D
	Subtotal	339	339	99.9%	49.8	10.5	D
SB	Left Turn	88	83	94.7%	37.1	5.4	D
	Through	111	114	103.0%	35.2	3.9	D
	Right Turn	86	87	101.6%	15.1	2.2	B
	Subtotal	285	285	100.0%	29.5	2.7	C
EB	Left Turn	70	67	95.6%	43.2	7.4	D
	Through	810	807	99.7%	28.8	5.6	C
	Right Turn	419	432	103.2%	11.5	1.3	B
	Subtotal	1,299	1,307	100.6%	23.8	4.0	C
WB	Left Turn	507	508	100.2%	70.3	17.4	E
	Through	995	987	99.2%	28.5	4.4	C
	Right Turn	150	145	96.3%	29.1	4.8	C
	Subtotal	1,652	1,640	99.2%	41.7	6.0	D
Total		3,575	3,570	99.9%	38.8	5.0	D

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	367	371	101.0%	42.7	7.1	D
	Right Turn	146	146	100.0%	7.7	0.9	A
	Subtotal	513	517	100.7%	32.7	6.0	C
SB	Left Turn	195	186	95.5%	49.4	4.5	D
	Through						
	Right Turn	1,229	1,210	98.5%	17.0	1.9	B
	Subtotal	1,424	1,397	98.1%	21.2	1.8	C
EB	Left Turn	638	629	98.5%	74.3	32.0	E
	Through	394	397	100.9%	15.2	1.5	B
	Right Turn						
	Subtotal	1,032	1,026	99.4%	51.9	19.2	D
WB	Left Turn						
	Through	423	433	102.2%	45.2	6.8	D
	Right Turn	262	264	100.7%	36.7	7.8	D
	Subtotal	685	696	101.6%	42.0	6.8	D
Total		3,654	3,635	99.5%	35.9	6.5	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	203	205	101.0%	20.6	2.7	C
	Through						
	Right Turn	90	94	104.1%	6.2	0.9	A
	Subtotal	293	299	101.9%	16.2	2.6	B
SB	Left Turn	1	0	40.0%	2.4	7.7	A
	Through	1	1	110.0%	7.5	15.6	A
	Right Turn	6	8	125.0%	5.0	2.7	A
	Subtotal	8	9	112.5%	10.3	8.0	B
EB	Left Turn	36	36	100.0%	29.3	8.2	C
	Through	539	536	99.4%	10.7	1.2	B
	Right Turn	142	138	97.2%	8.0	1.4	A
	Subtotal	717	710	99.0%	10.9	1.3	B
WB	Left Turn	63	62	98.1%	24.1	4.8	C
	Through	436	446	102.4%	7.7	1.4	A
	Right Turn	3	3	83.3%	2.9	6.7	A
	Subtotal	502	511	101.7%	9.6	1.3	A
Total		1,520	1,528	100.6%	11.5	1.0	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	219	194	88.8%	5.1	1.3	A
	Right Turn	91	87	95.1%	3.9	1.0	A
	Subtotal	310	281	90.6%	4.7	1.1	A
SB	Left Turn	42	46	109.0%	10.8	2.9	B
	Through	172	185	107.4%	1.7	0.5	A
	Right Turn						
	Subtotal	214	231	107.8%	3.5	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	81	78	96.4%	10.9	2.8	B
	Through						
	Right Turn	37	38	103.8%	3.7	0.6	A
	Subtotal	118	117	98.7%	8.5	1.7	A
Total		642	628	97.8%	4.9	0.8	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	304	274	90.0%	1.5	0.1	A
	Right Turn	28	27	95.0%	1.4	0.5	A
	Subtotal	332	300	90.4%	1.5	0.2	A
SB	Left Turn						
	Through	253	258	101.9%	0.6	0.2	A
	Right Turn						
	Subtotal	253	258	101.9%	0.6	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	6	6	105.0%	2.6	1.4	A
	Subtotal	6	6	105.0%	2.6	1.4	A
Total		591	564	95.5%	1.1	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	318	295	92.8%	8.3	1.0	A
	Right Turn	113	103	90.7%	7.0	1.1	A
	Subtotal	431	398	92.3%	7.9	1.0	A
SB	Left Turn	36	36	100.6%	15.9	4.2	B
	Through	217	220	101.4%	2.8	1.1	A
	Right Turn						
	Subtotal	253	256	101.3%	5.0	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	147	146	99.0%	12.8	2.4	B
	Through						
	Right Turn	14	12	87.9%	2.4	1.6	A
	Subtotal	161	158	98.0%	12.2	2.4	B
Total		845	812	96.1%	7.8	0.7	A

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	445	400	89.9%	12.8	0.8	B
	Right Turn	67	62	91.9%	9.7	1.5	A
	Subtotal	512	462	90.2%	12.4	0.9	B
SB	Left Turn	45	44	98.0%	9.4	1.1	A
	Through	355	362	102.0%	11.8	1.2	B
	Right Turn						
	Subtotal	400	406	101.5%	11.5	1.2	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	133	130	97.8%	7.1	1.2	A
	Through						
	Right Turn	37	37	100.0%	4.4	1.0	A
	Subtotal	170	167	98.3%	6.5	0.9	A
Total		1,082	1,035	95.6%	11.1	0.6	B

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	174	157	90.1%	9.4	3.0	A
	Through	558	492	88.2%	2.7	0.3	A
	Right Turn	92	82	89.2%	2.2	0.4	A
	Subtotal	824	731	88.7%	4.1	0.7	A
SB	Left Turn						
	Through	412	411	99.8%	1.1	0.2	A
	Right Turn	107	112	104.3%	0.5	0.2	A
	Subtotal	519	523	100.7%	1.0	0.1	A
EB	Left Turn						
	Through						
	Right Turn	614	625	101.8%	1.7	0.2	A
	Subtotal	614	625	101.8%	1.7	0.2	A
WB	Left Turn						
	Through						
	Right Turn	14	12	85.7%	4.5	1.8	A
	Subtotal	14	12	85.7%	4.5	1.8	A
Total		1,971	1,891	95.9%	2.5	0.3	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	156	157	100.6%	59.9	17.0	E
	Through						
	Right Turn	270	273	101.3%	61.7	16.2	E
	Subtotal	426	430	101.0%	61.2	15.8	E
SB	Left Turn	130	125	96.1%	48.2	7.9	D
	Through	122	123	100.6%	48.9	3.9	D
	Right Turn	121	125	102.9%	20.0	5.0	B
	Subtotal	373	372	99.8%	38.5	3.6	D
EB	Left Turn	147	82	55.9%	215.8	55.3	F
	Through	350	208	59.4%	154.3	39.9	F
	Right Turn	317	224	70.6%	15.3	10.3	B
	Subtotal	814	514	63.1%	96.9	26.8	F
WB	Left Turn	316	317	100.4%	49.3	2.8	D
	Through	920	932	101.3%	27.8	2.9	C
	Right Turn	172	165	95.9%	26.7	4.5	C
	Subtotal	1,408	1,415	100.5%	32.3	3.0	C
Total		3,021	2,731	90.4%	97.3	8.9	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	4	3	85.0%	22.3	30.4	C
	Through	265	274	103.5%	45.3	4.9	D
	Right Turn	84	85	101.4%	6.1	1.5	A
	Subtotal	353	363	102.8%	35.3	3.0	D
SB	Left Turn	117	113	96.9%	50.1	5.8	D
	Through						
	Right Turn	909	916	100.7%	20.9	2.3	C
	Subtotal	1,026	1,029	100.3%	24.4	1.9	C
EB	Left Turn	360	260	72.3%	46.3	2.3	D
	Through	275	228	83.0%	8.1	2.3	A
	Right Turn						
	Subtotal	635	489	76.9%	29.1	3.2	C
WB	Left Turn						
	Through	495	513	103.7%	26.5	3.6	C
	Right Turn	199	196	98.5%	21.5	4.8	C
	Subtotal	694	709	102.2%	25.2	3.7	C
Total		2,708	2,590	95.6%	26.9	1.4	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	142	139	98.1%	19.1	3.7	B
	Through	1	1	90.0%	0.1	0.4	A
	Right Turn	92	93	100.5%	4.7	0.5	A
	Subtotal	235	233	99.0%	13.5	2.8	B
SB	Left Turn						
	Through						
	Right Turn	3	3	96.7%	3.2	4.2	A
	Subtotal	3	3	96.7%	3.2	4.2	A
EB	Left Turn	16	15	94.4%	19.9	8.9	B
	Through	378	355	93.9%	9.6	1.8	A
	Right Turn	125	110	88.2%	7.4	1.9	A
	Subtotal	519	480	92.6%	9.5	1.5	A
WB	Left Turn	118	115	97.5%	19.1	2.4	B
	Through	600	605	100.8%	5.5	0.8	A
	Right Turn	1	1	130.0%	0.6	1.0	A
	Subtotal	719	721	100.3%	7.6	0.8	A
Total		1,476	1,437	97.4%	9.2	0.6	A

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	453	412	91.0%	2.8	0.1	A
	Right Turn	29	29	99.3%	2.6	0.3	A
	Subtotal	482	441	91.5%	2.8	0.1	A
SB	Left Turn	3	2	73.3%	2.5	3.3	A
	Through	400	407	101.8%	0.8	0.2	A
	Right Turn						
	Subtotal	403	409	101.6%	0.8	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	22	24	108.6%	4.0	1.1	A
	Subtotal	22	24	108.6%	4.0	1.1	A
Total		907	874	96.4%	1.9	0.1	A

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	422	386	91.6%	2.4	0.4	A
	Right Turn	53	49	92.8%	1.5	0.6	A
	Subtotal	475	436	91.7%	2.3	0.4	A
SB	Left Turn	13	13	101.5%	6.6	3.3	A
	Through	349	356	101.9%	2.0	0.7	A
	Right Turn						
	Subtotal	362	369	101.9%	2.2	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	54	54	100.4%	7.8	1.3	A
	Through						
	Right Turn	30	30	100.0%	4.1	0.9	A
	Subtotal	84	84	100.2%	6.4	1.0	A
Total		921	889	96.5%	2.6	0.5	A

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **Weekday AM**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	409	377	92.2%	1.1	0.3	A
	Right Turn	43	39	91.6%	1.3	0.5	A
	Subtotal	452	416	92.1%	1.1	0.3	A
SB	Left Turn	11	12	105.5%	4.2	1.9	A
	Through	348	357	102.6%	0.8	0.1	A
	Right Turn						
	Subtotal	359	369	102.6%	0.9	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	14	14	99.3%	10.5	5.0	B
	Through						
	Right Turn	22	22	98.6%	3.4	0.8	A
	Subtotal	36	36	98.9%	6.7	1.4	A
Total		847	820	96.9%	1.3	0.2	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	156	157	100.6%	59.9	17.0	E
	Through						
	Right Turn	270	273	101.3%	61.7	16.2	E
	Subtotal	426	430	101.0%	61.2	15.8	E
SB	Left Turn	130	125	96.1%	48.2	7.9	D
	Through	122	123	100.6%	48.9	3.9	D
	Right Turn	121	125	102.9%	20.0	5.0	B
	Subtotal	373	372	99.8%	38.5	3.6	D
EB	Left Turn	147	82	55.9%	215.8	55.3	F
	Through	350	208	59.4%	154.3	39.9	F
	Right Turn	317	224	70.6%	15.3	10.3	B
	Subtotal	814	514	63.1%	96.9	26.8	F
WB	Left Turn	316	317	100.4%	49.3	2.8	D
	Through	920	932	101.3%	27.8	2.9	C
	Right Turn	172	165	95.9%	26.7	4.5	C
	Subtotal	1,408	1,415	100.5%	32.3	3.0	C
Total		3,021	2,731	90.4%	97.3	8.9	F

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	810	682	84.2%	24.7	1.0	C
	Right Turn	331	266	80.2%	23.7	0.9	C
	Subtotal	1,141	947	83.0%	24.4	0.9	C
SB	Left Turn	41	37	89.8%	26.7	2.7	C
	Through	582	570	98.0%	5.3	0.7	A
	Right Turn						
	Subtotal	623	607	97.4%	6.6	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	332	318	95.9%	20.0	0.9	B
	Through						
	Right Turn	25	24	95.8%	6.0	1.2	A
	Subtotal	357	342	95.9%	19.0	0.9	B
Total		2,121	1,897	89.4%	17.7	0.7	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,320	1,096	83.0%	40.3	6.8	E
	Right Turn	62	54	86.4%	42.2	7.2	E
	Subtotal	1,382	1,149	83.2%	40.4	6.8	E
SB	Left Turn	90	72	79.9%	196.4	16.3	F
	Through	1,051	852	81.0%	242.4	17.1	F
	Right Turn						
	Subtotal	1,141	924	81.0%	238.9	17.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	161	150	93.5%	12.7	1.0	B
	Through						
	Right Turn	63	66	104.2%	7.7	0.9	A
	Subtotal	224	216	96.5%	11.2	1.0	B
Total		2,747	2,289	83.3%	117.7	7.0	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	197	163	82.7%	44.6	8.8	E
	Through	1,396	1,128	80.8%	4.5	0.4	A
	Right Turn	123	105	85.3%	3.4	0.4	A
	Subtotal	1,716	1,396	81.4%	9.1	1.2	A
SB	Left Turn						
	Through	1,051	858	81.7%	1.8	0.1	A
	Right Turn	214	166	77.6%	0.9	0.1	A
	Subtotal	1,265	1,024	81.0%	1.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn	419	408	97.4%	1.1	0.1	A
	Subtotal	419	408	97.4%	1.1	0.1	A
WB	Left Turn						
	Through						
	Right Turn	17	15	87.9%	12.9	2.9	B
	Subtotal	17	15	87.9%	12.9	2.9	B
Total		3,417	2,843	83.2%	5.3	0.6	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	282	214	76.0%	407.4	28.9	F
	Through						
	Right Turn	207	157	75.8%	398.5	26.3	F
	Subtotal	489	371	75.9%	403.7	27.8	F
SB	Left Turn	116	110	95.2%	41.1	3.0	D
	Through	109	112	102.4%	37.9	2.8	D
	Right Turn	66	70	105.8%	13.1	1.0	B
	Subtotal	291	292	100.3%	33.1	1.7	C
EB	Left Turn	65	29	44.3%	856.5	114.9	F
	Through	711	323	45.4%	682.1	65.5	F
	Right Turn	434	208	47.9%	269.8	48.7	F
	Subtotal	1,210	560	46.2%	538.6	63.7	F
WB	Left Turn	526	476	90.6%	67.4	23.8	E
	Through	994	875	88.0%	17.8	1.0	B
	Right Turn	177	156	87.9%	18.4	0.8	B
	Subtotal	1,697	1,507	88.8%	33.7	8.3	C
Total		3,687	2,730	74.0%	186.4	4.0	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	629	608	96.7%	57.5	9.8	E
	Right Turn	114	114	99.7%	9.0	2.5	A
	Subtotal	743	722	97.1%	49.8	8.4	D
SB	Left Turn	197	158	80.5%	46.0	2.3	D
	Through						
	Right Turn	1,273	1,089	85.5%	16.2	0.4	B
	Subtotal	1,470	1,247	84.9%	20.0	0.3	B
EB	Left Turn	695	405	58.3%	48.4	3.1	D
	Through	412	246	59.6%	16.8	2.0	B
	Right Turn						
	Subtotal	1,107	651	58.8%	36.4	1.8	D
WB	Left Turn						
	Through	424	428	100.8%	48.6	2.6	D
	Right Turn	392	381	97.3%	41.4	2.8	D
	Subtotal	816	809	99.1%	45.2	2.4	D
Total		4,136	3,429	82.9%	35.3	1.7	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	205	190	92.6%	21.6	3.1	C
	Through						
	Right Turn	55	54	98.5%	5.4	1.0	A
	Subtotal	260	244	93.8%	18.0	2.4	B
SB	Left Turn	1	0	39.6%	5.9	11.4	A
	Through	2	1	74.3%	19.5	14.5	B
	Right Turn	7	6	89.1%	10.5	8.9	B
	Subtotal	10	8	81.2%	12.8	5.1	B
EB	Left Turn	16	13	80.4%	32.8	4.9	C
	Through	510	384	75.3%	10.3	1.0	B
	Right Turn	160	114	71.0%	7.4	1.3	A
	Subtotal	686	511	74.4%	10.2	1.1	B
WB	Left Turn	46	48	105.2%	23.5	2.4	C
	Through	601	594	98.8%	10.7	1.8	B
	Right Turn	6	6	95.7%	10.2	6.2	B
	Subtotal	653	648	99.2%	11.6	1.8	B
Total		1,609	1,411	87.7%	12.2	1.2	B

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,230	1,032	83.9%	4.5	0.1	A
	Right Turn	153	131	85.7%	3.7	0.2	A
	Subtotal	1,383	1,163	84.1%	4.4	0.1	A
SB	Left Turn	14	12	84.9%	83.6	11.7	F
	Through	1,141	908	79.5%	116.2	8.6	F
	Right Turn						
	Subtotal	1,155	919	79.6%	115.8	8.5	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	125	121	96.7%	10.3	1.8	B
	Subtotal	125	121	96.7%	10.3	1.8	B
Total		2,663	2,204	82.7%	51.1	3.0	F

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,075	898	83.5%	12.4	0.5	B
	Right Turn	280	237	84.5%	12.4	0.9	B
	Subtotal	1,355	1,134	83.7%	12.4	0.5	B
SB	Left Turn	72	68	93.9%	125.6	62.8	F
	Through	847	819	96.7%	41.7	8.8	D
	Right Turn						
	Subtotal	919	887	96.5%	48.0	10.2	D
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	308	106	34.5%	952.8	344.3	F
	Through						
	Right Turn	167	79	47.6%	76.5	36.3	E
	Subtotal	475	186	39.1%	581.5	218.1	F
Total		2,749	2,207	80.3%	69.2	5.8	E

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **Weekday Midday**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,016	795	78.3%	3.7	0.2	A
	Right Turn	226	182	80.6%	3.8	0.2	A
	Subtotal	1,242	978	78.7%	3.7	0.2	A
SB	Left Turn	57	57	100.6%	13.9	2.4	B
	Through	842	830	98.6%	2.2	0.8	A
	Right Turn						
	Subtotal	899	888	98.7%	2.9	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	77	77	100.3%	124.1	51.0	F
	Through						
	Right Turn	125	130	104.0%	8.2	1.0	A
	Subtotal	202	207	102.6%	50.8	16.3	F
Total		2,343	2,072	88.4%	8.1	2.0	A

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	737	571	77.4%	10.9	0.9	B
	Right Turn	223	169	75.9%	8.7	0.7	A
	Subtotal	960	740	77.1%	10.4	0.8	B
SB	Left Turn	67	68	101.4%	22.0	2.9	C
	Through	452	458	101.4%	4.4	0.3	A
	Right Turn						
	Subtotal	519	526	101.4%	6.7	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	238	235	98.7%	16.7	1.3	B
	Through						
	Right Turn	88	87	98.4%	4.6	0.6	A
	Subtotal	326	321	98.6%	13.4	0.9	B
Total		1,805	1,588	88.0%	9.8	0.4	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	945	728	77.1%	2.5	0.2	A
	Right Turn	27	21	79.6%	2.7	0.4	A
	Subtotal	972	750	77.1%	2.5	0.2	A
SB	Left Turn						
	Through	690	684	99.1%	1.1	0.1	A
	Right Turn						
	Subtotal	690	684	99.1%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	15	13	87.8%	5.1	1.7	A
	Subtotal	15	13	87.8%	5.1	1.7	A
Total		1,677	1,447	86.3%	1.9	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	933	728	78.1%	28.5	2.3	C
	Right Turn	236	183	77.7%	26.9	2.3	C
	Subtotal	1,169	912	78.0%	28.2	2.3	C
SB	Left Turn	78	75	96.1%	28.3	3.0	C
	Through	612	607	99.3%	8.0	6.4	A
	Right Turn						
	Subtotal	690	682	98.9%	10.2	6.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	333	327	98.1%	24.0	6.7	C
	Through						
	Right Turn	39	38	98.2%	7.0	1.5	A
	Subtotal	372	365	98.1%	22.3	6.5	C
Total		2,231	1,959	87.8%	20.8	4.1	C

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,367	1,126	82.4%	89.8	21.8	F
	Right Turn	74	60	81.2%	90.1	20.5	F
	Subtotal	1,441	1,186	82.3%	89.8	21.8	F
SB	Left Turn	85	56	65.6%	232.9	14.3	F
	Through	1,120	825	73.7%	284.3	16.0	F
	Right Turn						
	Subtotal	1,205	881	73.1%	281.1	16.0	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	205	193	94.1%	15.2	1.9	C
	Through						
	Right Turn	80	74	92.3%	7.9	0.5	A
	Subtotal	285	267	93.6%	13.2	1.5	B
Total		2,931	2,334	79.6%	153.2	12.2	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	211	173	82.1%	89.4	43.7	F
	Through	1,428	1,154	80.8%	13.4	5.7	B
	Right Turn	137	111	81.2%	13.0	6.6	B
	Subtotal	1,776	1,438	81.0%	22.5	5.5	C
SB	Left Turn						
	Through	1,127	888	78.8%	2.1	0.1	A
	Right Turn	251	200	79.8%	1.1	0.2	A
	Subtotal	1,378	1,089	79.0%	1.9	0.1	A
EB	Left Turn						
	Through						
	Right Turn	450	446	99.2%	1.2	0.1	A
	Subtotal	450	446	99.2%	1.2	0.1	A
WB	Left Turn						
	Through						
	Right Turn	31	27	88.5%	354.1	250.1	F
	Subtotal	31	27	88.5%	354.1	250.1	F
Total		3,635	3,001	82.6%	14.5	3.5	B

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	348	284	81.6%	341.4	26.3	F
	Through						
	Right Turn	196	164	83.7%	326.6	23.8	F
	Subtotal	544	448	82.3%	336.1	25.2	F
SB	Left Turn	163	164	100.6%	82.3	24.7	F
	Through	165	165	100.3%	68.8	24.0	E
	Right Turn	97	98	101.0%	27.2	16.8	C
	Subtotal	425	427	100.6%	64.5	21.9	E
EB	Left Turn	75	34	44.7%	887.4	136.4	F
	Through	820	342	41.7%	638.6	52.6	F
	Right Turn	607	257	42.4%	259.1	23.0	F
	Subtotal	1,502	633	42.1%	497.9	36.5	F
WB	Left Turn	544	466	85.7%	64.7	10.2	E
	Through	1,011	885	87.6%	26.0	0.8	C
	Right Turn	186	160	86.0%	27.6	1.5	C
	Subtotal	1,741	1,511	86.8%	38.2	3.5	D
Total		4,212	3,019	71.7%	181.8	4.4	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	1	49.5%	108.8	163.7	F
	Through	573	553	96.6%	114.0	71.7	F
	Right Turn	173	171	98.8%	28.9	30.2	C
	Subtotal	748	725	97.0%	94.1	62.1	F
SB	Left Turn	264	209	79.2%	53.6	2.9	D
	Through						
	Right Turn	1,313	1,103	84.0%	18.2	0.8	B
	Subtotal	1,577	1,312	83.2%	23.8	1.0	C
EB	Left Turn	755	453	60.0%	63.7	13.2	E
	Through	574	337	58.8%	13.6	0.7	B
	Right Turn						
	Subtotal	1,329	790	59.5%	42.4	7.9	D
WB	Left Turn						
	Through	426	422	99.0%	56.4	7.7	E
	Right Turn	448	436	97.2%	52.5	8.8	D
	Subtotal	874	857	98.1%	54.4	8.2	D
Total		4,528	3,685	81.4%	48.7	14.7	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	257	245	95.3%	74.1	66.0	E
	Through						
	Right Turn	98	88	90.0%	42.4	60.3	D
	Subtotal	355	333	93.8%	65.7	64.6	E
SB	Left Turn	2	2	108.9%	37.4	11.2	D
	Through	4	4	106.4%	33.6	13.7	C
	Right Turn	7	9	130.1%	19.8	11.9	B
	Subtotal	13	16	119.6%	25.9	9.3	C
EB	Left Turn	25	18	72.1%	32.9	7.0	C
	Through	768	566	73.7%	12.0	2.1	B
	Right Turn	175	127	72.4%	9.5	1.8	A
	Subtotal	968	711	73.4%	12.1	2.0	B
WB	Left Turn	51	44	85.4%	28.8	4.8	C
	Through	591	579	98.0%	20.0	8.7	B
	Right Turn	1	1	128.7%	13.4	19.6	B
	Subtotal	643	624	97.0%	20.6	8.4	C
Total		1,979	1,683	85.1%	25.6	14.8	C

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,271	1,061	83.5%	4.6	0.1	A
	Right Turn	176	140	79.5%	3.8	0.2	A
	Subtotal	1,447	1,201	83.0%	4.5	0.1	A
SB	Left Turn	17	14	80.9%	75.0	9.8	F
	Through	1,205	861	71.5%	131.2	5.1	F
	Right Turn						
	Subtotal	1,222	875	71.6%	130.3	5.2	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	144	141	98.0%	12.1	2.1	B
	Subtotal	144	141	98.0%	12.1	2.1	B
Total		2,813	2,217	78.8%	54.6	2.1	F

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,093	908	83.1%	13.2	0.8	B
	Right Turn	322	277	85.9%	13.8	1.8	B
	Subtotal	1,415	1,185	83.7%	13.3	1.0	B
SB	Left Turn	83	72	87.0%	344.9	150.6	F
	Through	868	822	94.7%	61.4	11.2	E
	Right Turn						
	Subtotal	951	894	94.0%	83.4	14.9	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	354	59	16.5%	1713.2	412.3	F
	Through						
	Right Turn	192	47	24.3%	149.5	69.9	F
	Subtotal	546	105	19.3%	1008.6	244.8	F
Total		2,912	2,184	75.0%	86.1	9.5	F

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,025	761	74.2%	3.7	0.2	A
	Right Turn	260	194	74.7%	4.1	0.2	A
	Subtotal	1,285	955	74.3%	3.8	0.2	A
SB	Left Turn	66	68	102.8%	22.3	22.0	C
	Through	862	858	99.6%	12.9	14.7	B
	Right Turn						
	Subtotal	928	926	99.8%	13.6	15.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	89	61	68.7%	676.6	711.4	F
	Through						
	Right Turn	144	129	89.9%	21.0	23.4	C
	Subtotal	233	191	81.8%	166.2	130.3	F
Total		2,446	2,071	84.7%	20.2	11.4	C

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	832	524	63.0%	14.6	1.6	B
	Right Turn	206	132	63.9%	11.9	1.6	B
	Subtotal	1,038	656	63.2%	14.0	1.5	B
SB	Left Turn	116	117	101.0%	22.3	2.2	C
	Through	543	553	101.8%	4.8	0.5	A
	Right Turn						
	Subtotal	659	670	101.7%	7.9	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	236	241	102.1%	17.6	1.1	B
	Through						
	Right Turn	127	135	105.9%	5.5	0.8	A
	Subtotal	363	376	103.5%	13.2	0.7	B
Total		2,060	1,701	82.6%	11.4	0.7	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,024	637	62.2%	2.4	0.2	A
	Right Turn	44	29	65.9%	2.4	0.3	A
	Subtotal	1,068	666	62.4%	2.4	0.2	A
SB	Left Turn						
	Through	779	784	100.6%	1.1	0.1	A
	Right Turn						
	Subtotal	779	784	100.6%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	14	15	106.8%	5.0	1.5	A
	Subtotal	14	15	106.8%	5.0	1.5	A
Total		1,861	1,465	78.7%	1.8	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,038	649	62.5%	25.0	1.5	C
	Right Turn	307	190	62.0%	24.1	1.9	C
	Subtotal	1,345	839	62.4%	24.8	1.5	C
SB	Left Turn	83	79	95.5%	28.7	2.7	C
	Through	696	704	101.2%	6.9	0.7	A
	Right Turn						
	Subtotal	779	784	100.6%	9.1	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	418	417	99.7%	22.0	1.2	C
	Through						
	Right Turn	30	32	107.9%	6.7	1.2	A
	Subtotal	448	449	100.2%	20.9	1.2	C
Total		2,572	2,072	80.6%	18.0	0.9	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,544	615	39.8%	44.9	20.6	E
	Right Turn	39	15	39.1%	47.3	19.0	E
	Subtotal	1,583	630	39.8%	44.9	20.6	E
SB	Left Turn	114	113	98.9%	102.3	27.5	F
	Through	1,295	1,243	96.0%	134.5	30.7	F
	Right Turn						
	Subtotal	1,409	1,356	96.2%	131.8	30.5	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	152	147	97.0%	109.3	49.5	F
	Through						
	Right Turn	77	82	106.5%	63.7	39.5	F
	Subtotal	229	229	100.2%	93.0	45.1	F
Total		3,221	2,215	68.8%	103.2	19.6	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	183	31	17.0%	1072.4	286.4	F
	Through	1,601	554	34.6%	7.0	4.7	A
	Right Turn	159	57	36.1%	4.7	6.4	A
	Subtotal	1,943	643	33.1%	54.4	9.2	F
SB	Left Turn						
	Through	1,191	1,145	96.2%	8.1	2.1	A
	Right Turn	247	232	94.0%	8.5	2.7	A
	Subtotal	1,438	1,378	95.8%	8.2	2.2	A
EB	Left Turn						
	Through						
	Right Turn	443	438	98.8%	1.6	0.2	A
	Subtotal	443	438	98.8%	1.6	0.2	A
WB	Left Turn						
	Through						
	Right Turn	28	29	105.0%	17.2	14.7	C
	Subtotal	28	29	105.0%	17.2	14.7	C
Total		3,852	2,488	64.6%	18.6	1.2	C

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	322	123	38.3%	745.7	184.4	F
	Through						
	Right Turn	205	82	40.0%	674.0	123.8	F
	Subtotal	527	206	39.0%	715.3	151.4	F
SB	Left Turn	88	57	64.4%	359.2	204.1	F
	Through	111	77	69.3%	232.5	161.2	F
	Right Turn	86	59	68.1%	221.8	169.0	F
	Subtotal	285	192	67.4%	263.9	173.4	F
EB	Left Turn	70	17	24.0%	1260.4	218.5	F
	Through	842	184	21.9%	1133.2	231.2	F
	Right Turn	419	98	23.5%	478.0	184.9	F
	Subtotal	1,331	299	22.5%	926.6	219.4	F
WB	Left Turn	656	530	80.7%	200.2	28.6	F
	Through	1,027	845	82.3%	21.3	1.4	C
	Right Turn	150	127	84.4%	21.9	2.2	C
	Subtotal	1,833	1,501	81.9%	84.7	11.8	F
Total		3,976	2,198	55.3%	262.9	24.4	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	648	274	42.2%	588.9	149.3	F
	Right Turn	146	61	42.1%	302.0	122.7	F
	Subtotal	794	335	42.2%	536.1	143.3	F
SB	Left Turn	224	210	93.8%	69.4	10.2	E
	Through						
	Right Turn	1,410	1,348	95.6%	35.9	6.6	D
	Subtotal	1,634	1,558	95.4%	40.4	6.1	D
EB	Left Turn	856	221	25.8%	423.4	139.2	F
	Through	394	121	30.7%	26.7	9.4	C
	Right Turn						
	Subtotal	1,250	342	27.4%	284.6	95.2	F
WB	Left Turn						
	Through	423	173	40.9%	161.6	36.2	F
	Right Turn	439	144	32.7%	245.9	81.4	F
	Subtotal	862	317	36.8%	198.2	52.1	F
Total		4,540	2,552	56.2%	150.0	14.4	F

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	203	79	38.8%	841.1	225.2	F
	Through						
	Right Turn	90	40	44.0%	678.0	217.7	F
	Subtotal	293	118	40.4%	786.2	222.2	F
SB	Left Turn	1	0	39.6%	10.6	17.9	B
	Through	1	0	49.5%	12.1	19.8	B
	Right Turn	6	5	90.8%	424.4	417.5	F
	Subtotal	8	6	79.2%	405.5	422.7	F
EB	Left Turn	36	20	55.8%	140.6	202.2	F
	Through	568	327	57.5%	15.0	8.2	B
	Right Turn	142	79	56.0%	11.2	4.6	B
	Subtotal	746	426	57.2%	20.5	15.3	C
WB	Left Turn	63	24	38.2%	62.3	34.5	E
	Through	613	220	35.9%	359.5	106.4	F
	Right Turn	3	1	29.7%	392.5	561.9	F
	Subtotal	679	245	36.1%	329.0	93.9	F
Total		1,726	796	46.1%	221.5	44.2	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,436	626	43.6%	3.9	0.2	A
	Right Turn	185	79	42.8%	3.3	0.2	A
	Subtotal	1,621	705	43.5%	3.8	0.2	A
SB	Left Turn	17	16	93.8%	29.3	10.8	D
	Through	1,409	1,346	95.5%	48.2	18.4	E
	Right Turn						
	Subtotal	1,426	1,361	95.5%	48.0	18.3	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	156	149	95.7%	7.2	1.2	A
	Subtotal	156	149	95.7%	7.2	1.2	A
Total		3,203	2,216	69.2%	31.3	11.2	D

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,253	610	48.7%	9.8	0.8	A
	Right Turn	339	165	48.7%	8.6	1.1	A
	Subtotal	1,592	776	48.7%	9.5	0.8	A
SB	Left Turn	87	88	100.7%	66.2	44.7	E
	Through	1,041	1,050	100.9%	15.0	7.4	B
	Right Turn						
	Subtotal	1,128	1,138	100.8%	18.9	9.3	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	385	325	84.3%	238.5	216.0	F
	Through						
	Right Turn	209	190	90.9%	24.2	25.8	C
	Subtotal	594	515	86.6%	156.9	140.9	F
Total		3,314	2,428	73.3%	41.3	26.9	D

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Existing Plus Project**
Volume and Delay by Movement **Saturday Midday**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,189	657	55.2%	3.0	0.2	A
	Right Turn	273	145	52.9%	2.9	0.2	A
	Subtotal	1,462	801	54.8%	3.0	0.2	A
SB	Left Turn	69	71	102.4%	11.7	2.7	B
	Through	1,032	1,052	102.0%	2.6	1.9	A
	Right Turn						
	Subtotal	1,101	1,123	102.0%	3.1	1.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	96	99	102.7%	202.9	119.8	F
	Through						
	Right Turn	156	160	102.8%	10.9	8.5	B
	Subtotal	252	259	102.8%	85.4	53.2	F
Total		2,815	2,183	77.6%	12.8	7.2	B

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	322	123	38.3%	745.7	184.4	F
	Through						
	Right Turn	205	82	40.0%	674.0	123.8	F
	Subtotal	527	206	39.0%	715.3	151.4	F
SB	Left Turn	88	57	64.4%	359.2	204.1	F
	Through	111	77	69.3%	232.5	161.2	F
	Right Turn	86	59	68.1%	221.8	169.0	F
	Subtotal	285	192	67.4%	263.9	173.4	F
EB	Left Turn	70	17	24.0%	1260.4	218.5	F
	Through	842	184	21.9%	1133.2	231.2	F
	Right Turn	419	98	23.5%	478.0	184.9	F
	Subtotal	1,331	299	22.5%	926.6	219.4	F
WB	Left Turn	656	530	80.7%	200.2	28.6	F
	Through	1,027	845	82.3%	21.3	1.4	C
	Right Turn	150	127	84.4%	21.9	2.2	C
	Subtotal	1,833	1,501	81.9%	84.7	11.8	F
Total		3,976	2,198	55.3%	262.9	24.4	F

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	170	158	92.7%	5.0	1.0	A
	Right Turn	100	86	85.8%	2.9	0.5	A
	Subtotal	270	243	90.1%	4.3	0.7	A
SB	Left Turn	50	49	97.4%	9.8	1.6	A
	Through	160	166	103.7%	2.5	0.9	A
	Right Turn						
	Subtotal	210	215	102.2%	4.4	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	90	95	105.2%	10.5	2.1	B
	Through						
	Right Turn	40	41	101.3%	3.7	0.7	A
	Subtotal	130	135	104.0%	8.6	1.8	A
Total		610	593	97.2%	5.3	0.8	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	260	233	89.7%	1.5	0.3	A
	Right Turn	40	36	89.8%	1.6	0.4	A
	Subtotal	300	269	89.7%	1.5	0.3	A
SB	Left Turn						
	Through	250	255	102.0%	0.7	0.2	A
	Right Turn						
	Subtotal	250	255	102.0%	0.7	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	11	107.0%	2.8	1.4	A
	Subtotal	10	11	107.0%	2.8	1.4	A
Total		560	535	95.5%	1.1	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	280	247	88.2%	7.1	0.4	A
	Right Turn	120	107	89.3%	5.6	1.4	A
	Subtotal	400	354	88.5%	6.6	0.6	A
SB	Left Turn	40	39	97.0%	12.9	3.9	B
	Through	210	217	103.3%	2.5	0.6	A
	Right Turn						
	Subtotal	250	256	102.3%	4.4	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	140	137	98.1%	11.9	2.1	B
	Through						
	Right Turn	20	22	111.5%	5.7	3.9	A
	Subtotal	160	160	99.8%	11.3	2.2	B
Total		810	770	95.0%	6.9	0.7	A

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	360	322	89.5%	11.7	0.7	B
	Right Turn	80	71	88.8%	8.4	1.8	A
	Subtotal	440	393	89.3%	11.1	0.8	B
SB	Left Turn	50	54	107.6%	6.4	1.1	A
	Through	300	297	99.1%	9.2	1.6	A
	Right Turn						
	Subtotal	350	351	100.3%	8.8	1.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	140	143	102.1%	7.0	2.0	A
	Through						
	Right Turn	40	39	97.8%	3.8	0.9	A
	Subtotal	180	182	101.1%	6.4	1.8	A
Total		970	926	95.5%	9.3	1.0	A

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	190	163	85.8%	7.7	2.2	A
	Through	480	416	86.7%	2.4	0.4	A
	Right Turn	100	86	85.5%	1.8	0.3	A
	Subtotal	770	665	86.3%	3.7	0.7	A
SB	Left Turn						
	Through	390	399	102.2%	1.1	0.2	A
	Right Turn	100	103	102.6%	0.4	0.1	A
	Subtotal	490	501	102.3%	1.0	0.2	A
EB	Left Turn						
	Through						
	Right Turn	650	642	98.8%	1.9	0.2	A
	Subtotal	650	642	98.8%	1.9	0.2	A
WB	Left Turn						
	Through						
	Right Turn	20	19	94.5%	4.7	2.1	A
	Subtotal	20	19	94.5%	4.7	2.1	A
Total		1,930	1,827	94.7%	2.3	0.2	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	140	140	99.9%	54.3	8.4	D
	Through						
	Right Turn	290	285	98.2%	57.5	8.2	E
	Subtotal	430	425	98.7%	56.5	8.1	E
SB	Left Turn	140	139	99.2%	54.9	7.4	D
	Through	130	130	99.8%	48.5	9.0	D
	Right Turn	130	135	103.8%	20.8	4.2	C
	Subtotal	400	404	100.9%	41.3	5.4	D
EB	Left Turn	179	76	42.6%	259.0	84.6	F
	Through	360	177	49.2%	183.9	65.4	F
	Right Turn	340	188	55.4%	33.5	27.8	C
	Subtotal	879	442	50.2%	116.3	42.7	F
WB	Left Turn	310	317	102.3%	49.1	4.9	D
	Through	950	954	100.4%	28.6	2.9	C
	Right Turn	190	182	95.5%	30.5	4.1	C
	Subtotal	1,450	1,452	100.1%	33.1	2.5	C
Total		3,159	2,722	86.2%	96.8	4.1	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	92.0%	55.1	27.8	E
	Through	240	242	100.8%	46.4	6.9	D
	Right Turn	90	92	102.2%	5.4	0.7	A
	Subtotal	340	343	100.9%	35.9	6.5	D
SB	Left Turn	120	108	90.3%	51.6	5.0	D
	Through						
	Right Turn	920	924	100.4%	20.3	2.3	C
	Subtotal	1,040	1,032	99.2%	23.5	2.4	C
EB	Left Turn	340	227	66.7%	50.6	3.0	D
	Through	290	217	75.0%	8.4	2.2	A
	Right Turn						
	Subtotal	630	444	70.5%	31.3	2.6	C
WB	Left Turn						
	Through	520	533	102.4%	27.7	4.7	C
	Right Turn	190	196	103.4%	21.5	4.0	C
	Subtotal	710	729	102.7%	26.1	4.3	C
Total		2,720	2,548	93.7%	27.2	1.6	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	150	156	103.8%	21.6	2.8	C
	Through	10	12	120.0%	17.9	10.9	B
	Right Turn	100	106	106.1%	5.3	1.0	A
	Subtotal	260	274	105.3%	15.3	2.6	B
SB	Left Turn						
	Through						
	Right Turn	10	10	103.0%	6.0	2.7	A
	Subtotal	10	10	103.0%	6.0	2.7	A
EB	Left Turn	20	17	83.0%	20.0	10.1	C
	Through	390	332	85.1%	10.6	1.7	B
	Right Turn	140	126	90.0%	7.1	1.0	A
	Subtotal	550	474	86.3%	10.0	1.5	A
WB	Left Turn	130	131	100.6%	21.0	3.9	C
	Through	610	611	100.2%	5.9	0.8	A
	Right Turn	10	12	123.0%	2.8	3.4	A
	Subtotal	750	754	100.5%	8.4	1.1	A
Total		1,570	1,513	96.3%	10.1	1.5	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	305	291	95.4%	8.3	0.7	A
	Right Turn	200	204	102.2%	6.1	0.5	A
	Subtotal	505	495	98.1%	7.4	0.6	A
SB	Left Turn	60	57	95.2%	20.3	2.7	C
	Through	345	348	100.8%	3.8	0.5	A
	Right Turn						
	Subtotal	405	405	100.0%	6.1	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	220	217	98.6%	14.2	1.2	B
	Through						
	Right Turn	70	67	95.7%	3.4	0.3	A
	Subtotal	290	284	97.9%	11.6	1.0	B
Total		1,200	1,184	98.7%	8.0	0.5	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	495	486	98.2%	2.2	0.1	A
	Right Turn	50	48	96.8%	2.4	0.3	A
	Subtotal	545	534	98.0%	2.2	0.1	A
SB	Left Turn						
	Through	565	556	98.3%	0.9	0.1	A
	Right Turn						
	Subtotal	565	556	98.3%	0.9	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	11	106.9%	3.8	0.9	A
	Subtotal	10	11	106.9%	3.8	0.9	A
Total		1,120	1,101	98.3%	1.6	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	515	504	97.9%	13.9	0.7	B
	Right Turn	290	281	97.1%	12.8	1.1	B
	Subtotal	805	786	97.6%	13.5	0.8	B
SB	Left Turn	40	40	101.2%	30.4	3.3	C
	Through	525	515	98.1%	5.8	0.3	A
	Right Turn						
	Subtotal	565	555	98.3%	7.6	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	420	423	100.8%	20.9	1.0	C
	Through						
	Right Turn	30	31	103.0%	5.3	1.1	A
	Subtotal	450	454	101.0%	19.8	0.9	B
Total		1,820	1,795	98.6%	13.3	0.5	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	730	727	99.5%	23.0	1.6	C
	Right Turn	70	68	96.6%	20.9	2.2	C
	Subtotal	800	794	99.3%	22.8	1.6	C
SB	Left Turn	105	99	93.9%	113.6	17.3	F
	Through	840	776	92.4%	190.7	21.3	F
	Right Turn						
	Subtotal	945	875	92.6%	182.0	20.6	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	225	218	97.1%	18.1	5.6	C
	Through						
	Right Turn	75	75	99.4%	9.7	4.1	A
	Subtotal	300	293	97.6%	16.0	5.2	C
Total		2,045	1,962	95.9%	92.8	8.5	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	210	195	92.9%	70.9	22.2	F
	Through	820	795	97.0%	3.7	0.6	A
	Right Turn	150	146	97.0%	2.6	0.4	A
	Subtotal	1,180	1,136	96.3%	15.1	4.6	C
SB	Left Turn						
	Through	990	943	95.3%	2.0	1.2	A
	Right Turn	120	113	93.8%	1.5	2.0	A
	Subtotal	1,110	1,056	95.1%	2.0	1.3	A
EB	Left Turn						
	Through						
	Right Turn	455	449	98.6%	2.2	2.8	A
	Subtotal	455	449	98.6%	2.2	2.8	A
WB	Left Turn						
	Through						
	Right Turn	33	33	98.7%	8.3	2.2	A
	Subtotal	33	33	98.7%	8.3	2.2	A
Total		2,778	2,673	96.2%	7.7	2.3	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	130	132	101.7%	60.6	11.7	E
	Through						
	Right Turn	220	220	100.0%	66.7	16.1	E
	Subtotal	350	352	100.7%	64.5	14.2	E
SB	Left Turn	130	128	98.5%	41.3	2.6	D
	Through	120	122	101.3%	36.7	2.2	D
	Right Turn	70	73	103.8%	15.4	1.8	B
	Subtotal	320	322	100.7%	33.8	2.0	C
EB	Left Turn	90	90	100.2%	44.8	3.0	D
	Through	720	708	98.3%	29.0	1.6	C
	Right Turn	460	447	97.2%	12.4	0.6	B
	Subtotal	1,270	1,245	98.0%	24.2	1.1	C
WB	Left Turn	450	430	95.6%	48.4	6.7	D
	Through	1,037	991	95.6%	38.9	5.7	D
	Right Turn	193	186	96.5%	44.0	7.5	D
	Subtotal	1,680	1,608	95.7%	42.1	5.7	D
Total		3,620	3,527	97.4%	37.3	2.9	D

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	375	368	98.1%	47.6	10.5	D
	Right Turn	120	120	99.7%	8.2	1.5	A
	Subtotal	495	488	98.5%	37.8	7.4	D
SB	Left Turn	215	200	93.2%	51.7	10.0	D
	Through						
	Right Turn	1,230	1,168	94.9%	18.7	7.7	B
	Subtotal	1,445	1,368	94.7%	23.5	8.2	C
EB	Left Turn	540	514	95.1%	60.6	19.3	E
	Through	440	448	101.9%	17.1	1.4	B
	Right Turn						
	Subtotal	980	962	98.1%	40.3	10.2	D
WB	Left Turn						
	Through	450	453	100.8%	44.1	3.8	D
	Right Turn	265	259	97.8%	34.5	6.2	C
	Subtotal	715	713	99.7%	40.6	4.6	D
Total		3,635	3,530	97.1%	33.5	6.3	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	223	216	96.7%	21.6	5.3	C
	Through						
	Right Turn	60	60	99.8%	5.8	2.1	A
	Subtotal	283	276	97.4%	18.1	4.2	B
SB	Left Turn						
	Through						
	Right Turn	10	9	87.1%	5.4	1.4	A
	Subtotal	10	9	87.1%	5.4	1.4	A
EB	Left Turn	20	20	99.5%	28.3	3.2	C
	Through	520	536	103.0%	9.8	0.7	A
	Right Turn	170	167	98.0%	7.8	1.0	A
	Subtotal	710	722	101.7%	9.9	0.7	A
WB	Left Turn	50	54	107.5%	23.1	2.5	C
	Through	447	441	98.6%	7.6	1.9	A
	Right Turn	10	9	89.1%	5.2	5.6	A
	Subtotal	507	503	99.3%	9.2	1.8	A
Total		1,510	1,510	100.0%	11.1	1.5	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	356	341	95.9%	9.8	0.9	A
	Right Turn	245	252	102.7%	7.7	0.7	A
	Subtotal	601	593	98.7%	8.9	0.8	A
SB	Left Turn	70	70	100.4%	22.6	2.2	C
	Through	357	368	103.2%	4.1	0.4	A
	Right Turn						
	Subtotal	427	439	102.7%	7.1	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	250	241	96.2%	16.2	1.5	B
	Through						
	Right Turn	90	83	92.7%	3.7	0.4	A
	Subtotal	340	324	95.3%	13.0	1.1	B
Total		1,368	1,356	99.1%	9.3	0.5	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	581	571	98.3%	2.4	0.2	A
	Right Turn	35	35	99.0%	2.6	0.3	A
	Subtotal	616	606	98.3%	2.4	0.2	A
SB	Left Turn						
	Through	607	601	99.0%	0.9	0.1	A
	Right Turn						
	Subtotal	607	601	99.0%	0.9	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	20	101.5%	4.6	1.4	A
	Subtotal	20	20	101.5%	4.6	1.4	A
Total		1,243	1,227	98.7%	1.7	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	576	564	97.9%	16.3	1.2	B
	Right Turn	284	274	96.3%	15.6	1.6	B
	Subtotal	860	837	97.4%	16.0	1.3	B
SB	Left Turn	80	77	96.2%	30.6	2.5	C
	Through	527	526	99.8%	6.0	3.1	A
	Right Turn						
	Subtotal	607	603	99.3%	9.1	2.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	394	382	96.9%	29.2	18.8	C
	Through						
	Right Turn	40	41	103.7%	6.4	1.2	A
	Subtotal	434	423	97.5%	27.0	17.0	C
Total		1,901	1,863	98.0%	16.2	4.9	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	778	774	99.5%	29.6	9.1	D
	Right Turn	80	78	96.9%	28.5	10.2	D
	Subtotal	858	851	99.2%	29.5	9.2	D
SB	Left Turn	92	91	98.7%	95.0	81.3	F
	Through	829	786	94.8%	150.0	100.4	F
	Right Turn						
	Subtotal	921	877	95.2%	144.1	98.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	241	237	98.2%	19.1	3.1	C
	Through						
	Right Turn	82	77	93.4%	9.9	2.2	A
	Subtotal	323	313	97.0%	16.8	3.0	C
Total		2,102	2,042	97.1%	76.4	42.6	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	220	200	90.8%	95.9	39.5	F
	Through	853	823	96.5%	3.9	0.5	A
	Right Turn	155	152	98.3%	2.7	0.3	A
	Subtotal	1,228	1,175	95.7%	19.6	7.8	C
SB	Left Turn						
	Through	1,000	977	97.7%	1.7	0.1	A
	Right Turn	128	125	97.3%	1.0	0.1	A
	Subtotal	1,128	1,102	97.7%	1.7	0.1	A
EB	Left Turn						
	Through						
	Right Turn	482	478	99.1%	1.3	0.1	A
	Subtotal	482	478	99.1%	1.3	0.1	A
WB	Left Turn						
	Through						
	Right Turn	38	41	107.6%	10.2	4.4	B
	Subtotal	38	41	107.6%	10.2	4.4	B
Total		2,876	2,796	97.2%	9.1	2.7	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	170	163	96.0%	72.8	66.4	E
	Through						
	Right Turn	210	205	97.6%	70.0	53.4	E
	Subtotal	380	368	96.9%	71.4	59.3	E
SB	Left Turn	180	177	98.3%	108.1	42.1	F
	Through	170	173	101.8%	87.5	21.2	F
	Right Turn	100	100	100.5%	39.8	15.3	D
	Subtotal	450	451	100.1%	84.8	26.0	F
EB	Left Turn	89	81	90.8%	88.0	52.2	F
	Through	820	761	92.8%	64.1	62.7	E
	Right Turn	640	614	95.9%	34.7	34.2	C
	Subtotal	1,549	1,456	94.0%	53.0	49.6	D
WB	Left Turn	438	427	97.6%	56.5	3.1	E
	Through	1,033	999	96.7%	37.6	3.0	D
	Right Turn	201	193	96.1%	40.5	3.7	D
	Subtotal	1,672	1,620	96.9%	42.9	2.6	D
Total		4,051	3,894	96.1%	53.6	22.0	D

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	367	365	99.6%	53.1	12.6	D
	Right Turn	180	179	99.6%	14.0	1.3	B
	Subtotal	547	545	99.6%	40.4	9.0	D
SB	Left Turn	260	249	95.6%	52.6	2.3	D
	Through						
	Right Turn	1,222	1,188	97.2%	18.5	0.7	B
	Subtotal	1,482	1,437	96.9%	24.4	0.7	C
EB	Left Turn	560	521	93.0%	83.8	62.8	F
	Through	610	578	94.8%	11.3	1.5	B
	Right Turn						
	Subtotal	1,170	1,099	93.9%	44.4	27.0	D
WB	Left Turn						
	Through	450	448	99.6%	39.7	10.3	D
	Right Turn	301	292	96.9%	36.0	15.5	D
	Subtotal	751	740	98.5%	38.2	12.4	D
Total		3,950	3,820	96.7%	34.7	9.8	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	271	259	95.6%	39.4	51.6	D
	Through						
	Right Turn	100	97	96.6%	23.3	49.0	C
	Subtotal	371	356	95.9%	35.0	51.0	D
SB	Left Turn						
	Through						
	Right Turn	10	10	103.0%	7.3	4.5	A
	Subtotal	10	10	103.0%	7.3	4.5	A
EB	Left Turn	30	28	93.7%	29.1	1.9	C
	Through	780	767	98.4%	11.8	1.2	B
	Right Turn	190	183	96.2%	9.8	0.9	A
	Subtotal	1,000	978	97.8%	12.0	1.0	B
WB	Left Turn	50	48	96.2%	27.6	5.3	C
	Through	447	434	97.1%	12.9	17.8	B
	Right Turn						
	Subtotal	497	482	97.0%	14.3	16.3	B
Total		1,878	1,826	97.3%	16.9	14.2	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	430	388	90.1%	98.1	61.5	F
	Right Turn	220	205	93.0%	80.9	51.5	F
	Subtotal	650	592	91.1%	92.3	58.0	F
SB	Left Turn	123	88	71.5%	36.6	17.9	D
	Through	475	351	73.9%	48.4	58.5	D
	Right Turn						
	Subtotal	598	439	73.4%	45.7	49.8	D
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	270	232	86.0%	35.3	22.8	D
	Through	7	0	0.0%	0.0	0.0	A
	Right Turn	133	121	91.0%	33.7	23.0	C
	Subtotal	410	353	86.2%	34.7	20.5	C
Total		1,658	1,384	83.5%	62.9	44.5	E

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	625	584	93.4%	29.5	21.2	D
	Right Turn	55	53	96.8%	25.1	19.7	D
	Subtotal	680	637	93.6%	29.1	20.8	D
SB	Left Turn	25	16	63.4%	144.4	138.3	F
	Through	690	555	80.4%	18.7	18.7	C
	Right Turn	30	0	0.0%	0.0	0.0	A
	Subtotal	745	571	76.6%	22.2	21.8	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	25	21	85.9%	205.1	218.9	F
	Subtotal	25	21	85.9%	205.1	218.9	F
Total		1,450	1,229	84.8%	28.3	23.1	D

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	650	622	95.6%	46.9	37.0	D
	Right Turn	350	332	94.8%	60.4	50.1	E
	Subtotal	1,000	953	95.3%	51.6	41.5	D
SB	Left Turn	90	64	70.7%	49.4	17.3	D
	Through	600	470	78.3%	23.6	19.1	C
	Right Turn						
	Subtotal	690	534	77.3%	26.7	18.9	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	500	383	76.5%	24.1	1.8	C
	Through						
	Right Turn	30	26	85.1%	9.0	3.8	A
	Subtotal	530	408	77.0%	23.2	1.6	C
Total		2,220	1,895	85.4%	38.6	26.0	D

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	920	911	99.0%	24.1	2.4	C
	Right Turn	50	55	110.1%	23.7	3.1	C
	Subtotal	970	966	99.6%	24.1	2.5	C
SB	Left Turn	120	88	73.3%	16.1	7.0	C
	Through	980	760	77.5%	21.7	8.6	C
	Right Turn						
	Subtotal	1,100	848	77.0%	21.1	8.4	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	160	151	94.5%	18.4	5.7	C
	Through						
	Right Turn	80	80	100.1%	8.7	2.3	A
	Subtotal	240	231	96.4%	15.0	4.3	C
Total		2,310	2,045	88.5%	21.8	3.7	C

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	190	184	96.9%	59.2	29.3	F
	Through	1,000	981	98.1%	3.8	0.4	A
	Right Turn	180	182	101.4%	3.0	0.3	A
	Subtotal	1,370	1,348	98.4%	11.2	4.4	B
SB	Left Turn						
	Through	1,040	852	82.0%	1.7	0.2	A
	Right Turn	100	83	83.3%	0.9	0.3	A
	Subtotal	1,140	936	82.1%	1.7	0.2	A
EB	Left Turn						
	Through						
	Right Turn	470	459	97.7%	1.3	0.1	A
	Subtotal	470	459	97.7%	1.3	0.1	A
WB	Left Turn						
	Through						
	Right Turn	30	31	103.0%	11.6	2.6	B
	Subtotal	30	31	103.0%	11.6	2.6	B
Total		3,010	2,774	92.2%	6.3	2.0	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	140	130	92.6%	92.9	42.2	F
	Through						
	Right Turn	210	213	101.5%	92.4	37.9	F
	Subtotal	350	343	98.0%	92.6	39.3	F
SB	Left Turn	100	98	98.2%	45.9	13.3	D
	Through	120	119	98.8%	37.8	5.3	D
	Right Turn	90	97	108.0%	16.7	3.9	B
	Subtotal	310	314	101.3%	33.8	7.3	C
EB	Left Turn	70	67	95.2%	104.7	94.8	F
	Through	860	836	97.2%	77.9	70.4	E
	Right Turn	440	433	98.3%	24.6	24.3	C
	Subtotal	1,370	1,335	97.4%	62.0	56.6	E
WB	Left Turn	540	491	90.9%	74.9	21.4	E
	Through	1,050	926	88.2%	28.2	2.5	C
	Right Turn	160	144	89.7%	29.8	3.3	C
	Subtotal	1,750	1,561	89.2%	43.2	8.3	D
Total		3,780	3,552	94.0%	53.9	25.7	D

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	410	412	100.4%	52.8	9.1	D
	Right Turn	150	147	98.0%	8.1	0.6	A
	Subtotal	560	559	99.8%	41.1	6.7	D
SB	Left Turn	210	174	82.6%	50.8	2.3	D
	Through						
	Right Turn	1,300	1,128	86.8%	17.0	0.7	B
	Subtotal	1,510	1,301	86.2%	21.5	0.8	C
EB	Left Turn	680	657	96.6%	91.7	33.0	F
	Through	420	401	95.4%	18.0	1.5	B
	Right Turn						
	Subtotal	1,100	1,058	96.2%	63.6	20.1	E
WB	Left Turn						
	Through	450	446	99.0%	48.2	6.0	D
	Right Turn	280	279	99.8%	40.5	7.0	D
	Subtotal	730	725	99.3%	45.2	6.3	D
Total		3,900	3,643	93.4%	41.3	6.9	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	220	216	98.1%	26.3	13.0	C
	Through	20	21	105.9%	19.6	15.0	B
	Right Turn	100	98	98.3%	8.5	6.7	A
	Subtotal	340	335	98.6%	20.6	11.1	C
SB	Left Turn						
	Through	20	19	92.6%	25.7	4.5	C
	Right Turn	10	11	111.9%	8.6	7.3	A
	Subtotal	30	30	99.0%	19.0	5.2	B
EB	Left Turn	40	35	88.6%	30.3	3.9	C
	Through	570	536	94.1%	11.1	1.8	B
	Right Turn	150	139	92.7%	8.8	1.8	A
	Subtotal	760	711	93.5%	11.6	1.8	B
WB	Left Turn	70	68	97.7%	23.9	2.2	C
	Through	460	450	97.8%	9.8	5.2	A
	Right Turn						
	Subtotal	530	518	97.7%	11.7	4.6	B
Total		1,660	1,594	96.0%	13.7	4.5	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	230	202	87.9%	5.2	0.8	A
	Right Turn	100	87	87.0%	3.6	0.7	A
	Subtotal	330	289	87.6%	4.7	0.7	A
SB	Left Turn	50	47	94.6%	11.5	2.6	B
	Through	180	193	107.2%	1.9	0.8	A
	Right Turn						
	Subtotal	230	240	104.4%	3.6	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	90	87	96.3%	9.8	1.6	A
	Through						
	Right Turn	40	42	103.8%	3.3	0.5	A
	Subtotal	130	128	98.6%	7.8	1.2	A
Total		690	658	95.3%	4.9	0.6	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	320	290	90.6%	1.6	0.3	A
	Right Turn	30	28	93.0%	1.7	0.4	A
	Subtotal	350	318	90.8%	1.6	0.3	A
SB	Left Turn						
	Through	270	277	102.4%	0.6	0.1	A
	Right Turn						
	Subtotal	270	277	102.4%	0.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	85.0%	2.8	1.3	A
	Subtotal	10	9	85.0%	2.8	1.3	A
Total		630	603	95.7%	1.2	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	340	309	91.0%	10.5	1.5	B
	Right Turn	162	141	86.8%	8.4	1.3	A
	Subtotal	502	450	89.6%	9.7	1.3	A
SB	Left Turn	40	43	106.8%	16.8	4.3	B
	Through	230	234	101.6%	3.2	0.7	A
	Right Turn						
	Subtotal	270	276	102.3%	5.0	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	193	182	94.2%	12.8	1.8	B
	Through						
	Right Turn	20	18	88.5%	4.3	3.0	A
	Subtotal	213	200	93.7%	12.1	1.6	B
Total		985	926	94.0%	8.9	0.9	A

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	512	455	88.8%	8.6	1.3	A
	Right Turn	80	75	94.3%	7.2	1.9	A
	Subtotal	592	530	89.5%	8.4	1.3	A
SB	Left Turn	50	48	95.4%	10.2	2.1	B
	Through	397	402	101.3%	6.4	1.1	A
	Right Turn						
	Subtotal	447	450	100.6%	6.8	1.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	140	139	99.3%	11.6	1.8	B
	Through						
	Right Turn	40	42	105.5%	4.9	1.0	A
	Subtotal	180	181	100.7%	10.1	1.5	B
Total		1,219	1,161	95.2%	8.0	0.6	A

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	190	159	83.8%	8.4	1.8	A
	Through	632	556	87.9%	2.6	0.2	A
	Right Turn	100	82	81.7%	1.9	0.3	A
	Subtotal	922	797	86.4%	3.7	0.5	A
SB	Left Turn						
	Through	466	478	102.5%	1.4	0.3	A
	Right Turn	121	117	96.9%	0.6	0.1	A
	Subtotal	587	595	101.4%	1.2	0.2	A
EB	Left Turn						
	Through						
	Right Turn	650	635	97.7%	1.7	0.2	A
	Subtotal	650	635	97.7%	1.7	0.2	A
WB	Left Turn						
	Through						
	Right Turn	20	17	84.5%	6.1	2.6	A
	Subtotal	20	17	84.5%	6.1	2.6	A
Total		2,179	2,044	93.8%	2.4	0.3	A

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	174	173	99.5%	59.3	14.5	E
	Through						
	Right Turn	290	288	99.4%	60.7	10.9	E
	Subtotal	464	461	99.4%	60.2	11.9	E
SB	Left Turn	140	143	102.2%	58.4	9.6	E
	Through	130	128	98.6%	50.5	6.6	D
	Right Turn	130	135	103.9%	20.2	4.8	C
	Subtotal	400	406	101.6%	43.3	5.3	D
EB	Left Turn	179	69	38.4%	294.8	60.2	F
	Through	378	174	46.0%	216.8	48.7	F
	Right Turn	340	182	53.6%	34.9	22.2	C
	Subtotal	897	425	47.4%	134.8	30.2	F
WB	Left Turn	353	336	95.3%	52.2	4.4	D
	Through	971	969	99.8%	30.7	4.1	C
	Right Turn	190	190	99.9%	30.6	4.1	C
	Subtotal	1,514	1,495	98.8%	36.0	3.3	D
Total		3,275	2,788	85.1%	91.0	7.2	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	89.0%	47.8	33.4	D
	Through	305	307	100.5%	43.3	2.3	D
	Right Turn	90	95	105.7%	5.3	0.8	A
	Subtotal	405	411	101.4%	35.7	3.2	D
SB	Left Turn	132	131	99.4%	46.8	5.8	D
	Through						
	Right Turn	984	972	98.8%	16.7	3.0	B
	Subtotal	1,116	1,104	98.9%	20.5	2.7	C
EB	Left Turn	392	261	66.5%	46.0	3.8	D
	Through	290	217	74.9%	11.2	2.1	B
	Right Turn						
	Subtotal	682	478	70.1%	31.2	2.9	C
WB	Left Turn						
	Through	520	530	102.0%	35.4	3.9	D
	Right Turn	225	227	101.0%	28.0	5.2	C
	Subtotal	745	758	101.7%	33.2	4.2	C
Total		2,948	2,750	93.3%	28.0	1.4	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	150	155	103.3%	21.1	1.6	C
	Through	10	12	115.0%	13.1	7.0	B
	Right Turn	100	107	106.8%	5.7	1.4	A
	Subtotal	260	273	105.1%	15.2	1.4	B
SB	Left Turn						
	Through						
	Right Turn	10	8	76.0%	4.1	3.9	A
	Subtotal	10	8	76.0%	4.1	3.9	A
EB	Left Turn	20	16	78.0%	26.3	12.8	C
	Through	402	363	90.2%	10.3	0.6	B
	Right Turn	140	120	85.6%	7.1	1.6	A
	Subtotal	562	498	88.7%	10.0	0.5	A
WB	Left Turn	130	131	100.8%	20.6	2.3	C
	Through	645	642	99.5%	5.9	1.3	A
	Right Turn	10	11	106.0%	2.4	2.5	A
	Subtotal	785	783	99.8%	8.3	1.3	A
Total		1,617	1,562	96.6%	10.1	0.9	B

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	523	469	89.7%	1.9	0.3	A
	Right Turn	29	31	107.9%	1.7	0.4	A
	Subtotal	552	500	90.6%	1.8	0.3	A
SB	Left Turn	3	2	73.3%	1.3	2.4	A
	Through	447	450	100.6%	0.9	0.1	A
	Right Turn						
	Subtotal	450	452	100.4%	0.9	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	22	22	100.9%	3.8	0.9	A
	Subtotal	22	22	100.9%	3.8	0.9	A
Total		1,024	974	95.1%	1.4	0.2	A

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	492	440	89.3%	3.3	0.8	A
	Right Turn	53	50	94.5%	2.0	0.7	A
	Subtotal	545	490	89.8%	3.1	0.7	A
SB	Left Turn	13	13	98.5%	3.3	1.4	A
	Through	396	396	100.0%	2.2	0.5	A
	Right Turn						
	Subtotal	409	409	100.0%	2.2	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	54	56	102.8%	8.1	1.9	A
	Through						
	Right Turn	31	30	96.5%	4.0	0.6	A
	Subtotal	85	85	100.5%	6.8	1.3	A
Total		1,039	984	94.7%	3.1	0.5	A

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Near Term Plus Project**
Volume and Delay by Movement **Weekday AM**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	480	427	89.0%	1.4	0.3	A
	Right Turn	43	43	100.5%	1.6	0.6	A
	Subtotal	523	471	90.0%	1.4	0.2	A
SB	Left Turn	11	11	100.0%	3.2	2.4	A
	Through	395	396	100.2%	0.8	0.1	A
	Right Turn						
	Subtotal	406	407	100.2%	0.9	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	14	13	92.1%	13.7	8.7	B
	Through						
	Right Turn	22	24	108.2%	3.9	1.1	A
	Subtotal	36	37	101.9%	7.2	2.9	A
Total		965	914	94.7%	1.4	0.3	A

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	644	461	71.6%	8.7	0.5	A
	Right Turn	200	147	73.5%	6.6	0.7	A
	Subtotal	844	608	72.0%	8.2	0.4	A
SB	Left Turn	60	58	96.7%	22.8	7.9	C
	Through	469	453	96.6%	11.1	23.0	B
	Right Turn						
	Subtotal	529	511	96.6%	12.5	21.5	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	200	196	98.2%	17.7	7.0	B
	Through						
	Right Turn	70	63	90.2%	4.1	0.5	A
	Subtotal	270	259	96.1%	14.4	5.5	B
Total		1,643	1,379	83.9%	10.9	8.9	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	834	596	71.5%	2.2	0.1	A
	Right Turn	50	34	67.7%	2.4	0.2	A
	Subtotal	884	630	71.3%	2.2	0.1	A
SB	Left Turn						
	Through	669	638	95.3%	4.8	12.0	A
	Right Turn						
	Subtotal	669	638	95.3%	4.8	12.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	88.1%	4.0	0.8	A
	Subtotal	10	9	88.1%	4.0	0.8	A
Total		1,563	1,277	81.7%	3.5	6.0	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	854	617	72.3%	27.8	2.8	C
	Right Turn	396	274	69.3%	26.4	2.9	C
	Subtotal	1,250	892	71.3%	27.4	2.8	C
SB	Left Turn	40	38	95.0%	37.4	22.7	D
	Through	629	595	94.6%	16.3	33.1	B
	Right Turn						
	Subtotal	669	633	94.6%	17.6	32.5	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	412	389	94.4%	33.5	42.3	C
	Through						
	Right Turn	30	32	107.9%	10.7	16.2	B
	Subtotal	442	421	95.3%	31.8	40.5	C
Total		2,361	1,946	82.4%	25.2	19.7	C

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,416	792	55.9%	16.3	1.5	C
	Right Turn	70	35	49.8%	14.4	2.3	B
	Subtotal	1,486	827	55.6%	16.3	1.5	C
SB	Left Turn	105	100	95.0%	38.8	50.2	E
	Through	1,163	1,114	95.8%	39.9	54.9	E
	Right Turn						
	Subtotal	1,268	1,214	95.8%	39.8	54.5	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	225	215	95.4%	38.3	60.7	E
	Through						
	Right Turn	75	73	96.8%	33.2	73.9	D
	Subtotal	300	287	95.7%	36.9	63.8	E
Total		3,054	2,328	76.2%	30.9	35.7	D

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	210	80	38.1%	470.7	169.2	F
	Through	1,466	747	50.9%	4.8	0.5	A
	Right Turn	184	99	53.9%	3.0	0.5	A
	Subtotal	1,860	926	49.8%	42.4	8.1	E
SB	Left Turn						
	Through	1,191	1,147	96.3%	7.2	7.9	A
	Right Turn	242	223	92.0%	3.3	0.8	A
	Subtotal	1,433	1,370	95.6%	6.5	6.6	A
EB	Left Turn						
	Through						
	Right Turn	450	443	98.3%	1.3	0.2	A
	Subtotal	450	443	98.3%	1.3	0.2	A
WB	Left Turn						
	Through						
	Right Turn	33	34	103.8%	9.2	2.0	A
	Subtotal	33	34	103.8%	9.2	2.0	A
Total		3,776	2,773	73.4%	17.4	4.5	C

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	290	196	67.7%	466.1	92.9	F
	Through						
	Right Turn	220	142	64.5%	428.2	77.4	F
	Subtotal	510	338	66.3%	450.1	85.7	F
SB	Left Turn	123	109	88.7%	104.4	116.9	F
	Through	120	114	94.8%	70.9	65.2	E
	Right Turn	70	65	93.2%	51.6	76.8	D
	Subtotal	313	288	92.0%	78.5	85.0	E
EB	Left Turn	90	22	24.3%	1337.9	280.4	F
	Through	773	174	22.6%	1151.9	262.7	F
	Right Turn	460	116	25.3%	488.8	166.5	F
	Subtotal	1,323	313	23.6%	918.8	223.6	F
WB	Left Turn	567	491	86.5%	112.5	40.5	F
	Through	1,086	943	86.8%	21.2	1.9	C
	Right Turn	179	159	88.8%	21.5	3.0	C
	Subtotal	1,832	1,593	86.9%	49.5	13.7	D
Total		3,978	2,531	63.6%	207.2	23.5	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	677	407	60.1%	408.9	66.7	F
	Right Turn	120	73	61.1%	256.6	235.9	F
	Subtotal	797	480	60.2%	382.0	80.1	F
SB	Left Turn	259	239	92.2%	89.6	105.8	F
	Through						
	Right Turn	1,382	1,324	95.8%	26.9	12.9	C
	Subtotal	1,641	1,563	95.2%	34.7	20.7	C
EB	Left Turn	746	276	36.9%	200.0	106.5	F
	Through	440	185	42.1%	54.4	119.8	D
	Right Turn						
	Subtotal	1,186	461	38.9%	141.5	109.6	F
WB	Left Turn						
	Through	450	287	63.8%	102.1	19.8	F
	Right Turn	437	247	56.4%	124.9	42.4	F
	Subtotal	887	533	60.1%	112.9	30.4	F
Total		4,511	3,037	67.3%	117.6	37.8	F

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	223	141	63.2%	542.0	187.8	F
	Through						
	Right Turn	60	43	71.0%	381.4	102.1	F
	Subtotal	283	184	64.9%	504.0	156.8	F
SB	Left Turn						
	Through						
	Right Turn	10	9	86.1%	199.1	297.3	F
	Subtotal	10	9	86.1%	199.1	297.3	F
EB	Left Turn	20	12	58.9%	64.8	29.0	E
	Through	564	364	64.5%	41.6	94.3	D
	Right Turn	170	103	60.4%	29.8	66.5	C
	Subtotal	754	478	63.5%	39.8	87.0	D
WB	Left Turn	50	30	60.8%	63.7	27.8	E
	Through	649	374	57.6%	211.5	78.0	F
	Right Turn	10	6	62.4%	351.4	294.9	F
	Subtotal	709	411	57.9%	202.0	74.4	F
Total		1,756	1,081	61.6%	180.2	94.6	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,338	780	58.3%	3.9	0.3	A
	Right Turn	153	87	56.7%	3.5	0.3	A
	Subtotal	1,491	867	58.1%	3.9	0.3	A
SB	Left Turn	14	13	93.3%	21.3	30.0	C
	Through	1,268	1,192	94.0%	8.8	19.0	A
	Right Turn						
	Subtotal	1,282	1,205	94.0%	9.0	19.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	125	122	97.6%	10.8	4.0	B
	Subtotal	125	122	97.6%	10.8	4.0	B
Total		2,898	2,194	75.7%	7.0	10.6	A

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,183	727	61.5%	14.1	2.5	B
	Right Turn	280	169	60.4%	13.8	3.8	B
	Subtotal	1,463	896	61.3%	14.0	2.7	B
SB	Left Turn	72	67	93.2%	17.8	6.1	B
	Through	974	918	94.3%	12.4	19.6	B
	Right Turn						
	Subtotal	1,046	985	94.2%	12.8	18.6	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	308	290	94.2%	36.4	64.3	D
	Through						
	Right Turn	167	160	95.7%	8.9	2.2	A
	Subtotal	475	450	94.7%	25.9	39.7	C
Total		2,984	2,331	78.1%	15.7	15.7	B

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Near Term Plus Project**
Volume and Delay by Movement **Weekday Midday**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,124	737	65.6%	3.6	0.3	A
	Right Turn	226	151	66.8%	3.4	0.3	A
	Subtotal	1,350	888	65.8%	3.6	0.3	A
SB	Left Turn	57	56	98.5%	17.3	18.4	C
	Through	969	930	96.0%	6.1	14.4	A
	Right Turn						
	Subtotal	1,026	986	96.1%	6.7	14.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	77	75	98.0%	119.3	67.1	F
	Through						
	Right Turn	125	129	103.3%	7.3	1.5	A
	Subtotal	202	205	101.3%	49.6	26.8	E
Total		2,578	2,079	80.6%	9.7	9.0	A

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	766	474	61.8%	10.6	1.1	B
	Right Turn	240	152	63.3%	8.2	1.0	A
	Subtotal	1,006	626	62.2%	10.0	1.0	A
SB	Left Turn	70	72	103.2%	21.3	3.0	C
	Through	487	498	102.2%	4.6	0.7	A
	Right Turn						
	Subtotal	557	570	102.4%	6.7	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	240	233	97.1%	16.2	0.5	B
	Through						
	Right Turn	90	89	99.2%	4.3	0.4	A
	Subtotal	330	322	97.7%	12.9	0.4	B
Total		1,893	1,518	80.2%	9.4	0.7	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	986	606	61.5%	2.2	0.1	A
	Right Turn	30	18	59.4%	2.4	0.5	A
	Subtotal	1,016	624	61.4%	2.2	0.1	A
SB	Left Turn						
	Through	727	720	99.0%	1.1	0.1	A
	Right Turn						
	Subtotal	727	720	99.0%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	18	92.1%	5.4	1.8	A
	Subtotal	20	18	92.1%	5.4	1.8	A
Total		1,763	1,362	77.3%	1.7	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	976	605	62.0%	29.4	3.2	C
	Right Turn	340	202	59.5%	28.0	3.3	C
	Subtotal	1,316	807	61.3%	29.1	3.2	C
SB	Left Turn	80	80	99.9%	28.1	1.5	C
	Through	647	640	98.8%	6.2	0.9	A
	Right Turn						
	Subtotal	727	719	99.0%	8.6	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	410	395	96.3%	21.2	0.6	C
	Through						
	Right Turn	40	38	95.5%	5.6	1.2	A
	Subtotal	450	433	96.2%	19.8	0.7	B
Total		2,493	1,960	78.6%	19.5	1.3	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,512	581	38.4%	15.1	1.0	C
	Right Turn	80	29	35.8%	13.3	1.4	B
	Subtotal	1,592	610	38.3%	15.0	1.0	B
SB	Left Turn	92	87	94.9%	23.7	3.4	C
	Through	1,225	1,237	101.0%	24.5	4.9	C
	Right Turn						
	Subtotal	1,317	1,324	100.5%	24.5	4.8	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	241	237	98.3%	22.6	1.6	C
	Through						
	Right Turn	82	81	98.5%	13.3	1.6	B
	Subtotal	323	318	98.4%	20.2	1.5	C
Total		3,232	2,252	69.7%	21.4	3.1	C

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	220	49	22.2%	770.0	214.6	F
	Through	1,577	519	32.9%	4.7	0.8	A
	Right Turn	186	61	32.6%	2.3	0.3	A
	Subtotal	1,983	628	31.7%	60.8	8.6	F
SB	Left Turn						
	Through	1,256	1,271	101.2%	4.8	0.3	A
	Right Turn	268	262	97.9%	3.7	0.4	A
	Subtotal	1,524	1,533	100.6%	4.6	0.4	A
EB	Left Turn						
	Through						
	Right Turn	480	477	99.4%	1.4	0.1	A
	Subtotal	480	477	99.4%	1.4	0.1	A
WB	Left Turn						
	Through						
	Right Turn	38	39	103.4%	6.7	1.6	A
	Subtotal	38	39	103.4%	6.7	1.6	A
Total		4,025	2,678	66.5%	16.9	0.8	C

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	354	144	40.8%	658.2	112.5	F
	Through						
	Right Turn	210	90	42.8%	588.4	97.5	F
	Subtotal	564	234	41.5%	630.7	105.2	F
SB	Left Turn	171	91	53.1%	543.8	94.7	F
	Through	170	92	54.2%	448.9	108.6	F
	Right Turn	100	60	59.7%	375.2	93.1	F
	Subtotal	441	243	55.0%	465.4	83.7	F
EB	Left Turn	89	17	18.9%	1341.1	274.5	F
	Through	927	171	18.5%	1145.7	187.1	F
	Right Turn	640	129	20.1%	475.1	151.6	F
	Subtotal	1,656	317	19.1%	884.9	168.4	F
WB	Left Turn	573	487	85.1%	70.5	12.0	E
	Through	1,096	917	83.7%	30.3	0.6	C
	Right Turn	199	175	87.8%	31.0	1.1	C
	Subtotal	1,868	1,579	84.5%	42.9	4.1	D
Total		4,529	2,373	52.4%	249.3	10.0	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	652	236	36.2%	666.8	139.4	F
	Right Turn	180	62	34.5%	388.3	119.9	F
	Subtotal	832	298	35.8%	608.3	131.5	F
SB	Left Turn	318	312	98.0%	62.1	4.0	E
	Through						
	Right Turn	1,418	1,406	99.2%	23.8	1.2	C
	Subtotal	1,736	1,718	99.0%	30.7	1.3	C
EB	Left Turn	842	208	24.7%	470.6	99.5	F
	Through	610	185	30.4%	20.9	5.6	C
	Right Turn						
	Subtotal	1,452	393	27.1%	258.8	54.6	F
WB	Left Turn						
	Through	450	183	40.7%	138.4	50.2	F
	Right Turn	489	181	36.9%	208.8	97.1	F
	Subtotal	939	364	38.8%	171.7	70.1	F
Total		4,959	2,773	55.9%	136.7	7.0	F

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	271	98	36.3%	913.9	280.4	F
	Through						
	Right Turn	100	34	34.5%	803.1	241.4	F
	Subtotal	371	133	35.8%	883.1	262.1	F
SB	Left Turn						
	Through						
	Right Turn	10	9	94.1%	240.5	203.9	F
	Subtotal	10	9	94.1%	240.5	203.9	F
EB	Left Turn	30	16	51.8%	59.7	48.3	E
	Through	838	455	54.3%	13.6	4.7	B
	Right Turn	190	102	53.5%	11.4	4.0	B
	Subtotal	1,058	573	54.1%	14.4	4.5	B
WB	Left Turn	50	21	42.2%	92.7	51.2	F
	Through	635	232	36.5%	408.5	178.4	F
	Right Turn						
	Subtotal	685	253	36.9%	382.3	165.3	F
Total		2,124	968	45.6%	211.1	20.6	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,418	600	42.3%	3.4	0.4	A
	Right Turn	176	73	41.5%	2.9	0.3	A
	Subtotal	1,594	673	42.2%	3.3	0.4	A
SB	Left Turn	17	18	104.2%	9.9	3.0	A
	Through	1,317	1,303	98.9%	3.3	1.1	A
	Right Turn						
	Subtotal	1,334	1,321	99.0%	3.4	1.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	144	139	96.4%	9.0	3.4	A
	Subtotal	144	139	96.4%	9.0	3.4	A
Total		3,072	2,133	69.4%	3.8	0.8	A

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,240	589	47.5%	14.7	3.0	B
	Right Turn	322	153	47.5%	14.5	4.2	B
	Subtotal	1,562	742	47.5%	14.7	3.2	B
SB	Left Turn	83	82	98.3%	14.9	1.8	B
	Through	980	965	98.5%	7.3	0.4	A
	Right Turn						
	Subtotal	1,063	1,047	98.5%	7.9	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	354	357	100.7%	15.8	0.9	B
	Through						
	Right Turn	192	190	99.1%	7.2	1.2	A
	Subtotal	546	547	100.1%	12.8	0.8	B
Total		3,171	2,335	73.6%	11.2	1.2	B

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Near Term Plus Project**
Volume and Delay by Movement **Weekday Evening**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,172	642	54.8%	3.1	0.2	A
	Right Turn	260	139	53.4%	3.0	0.3	A
	Subtotal	1,432	781	54.6%	3.1	0.2	A
SB	Left Turn	66	62	94.7%	10.2	2.2	B
	Through	974	971	99.7%	1.7	0.2	A
	Right Turn						
	Subtotal	1,040	1,033	99.4%	2.2	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	89	90	101.4%	168.7	131.7	F
	Through						
	Right Turn	144	137	94.9%	6.3	0.7	A
	Subtotal	233	227	97.4%	73.7	57.9	F
Total		2,705	2,042	75.5%	10.6	6.7	B

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	878	461	52.5%	14.6	1.2	B
	Right Turn	220	116	52.8%	10.7	1.3	B
	Subtotal	1,098	577	52.5%	13.8	1.1	B
SB	Left Turn	123	119	96.3%	23.2	2.9	C
	Through	571	567	99.3%	5.4	0.5	A
	Right Turn						
	Subtotal	694	685	98.8%	8.5	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	270	271	100.4%	17.5	1.5	B
	Through						
	Right Turn	133	137	102.9%	4.8	0.4	A
	Subtotal	403	408	101.2%	13.3	1.2	B
Total		2,195	1,670	76.1%	11.5	0.5	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,053	530	50.3%	2.3	0.1	A
	Right Turn	50	25	50.7%	2.5	0.3	A
	Subtotal	1,103	555	50.4%	2.3	0.1	A
SB	Left Turn	25	25	100.6%	6.8	1.9	A
	Through	816	805	98.7%	1.5	0.2	A
	Right Turn						
	Subtotal	841	830	98.7%	1.7	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	45	44	98.3%	4.9	1.4	A
	Subtotal	45	44	98.3%	4.9	1.4	A
Total		1,989	1,430	71.9%	2.0	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,073	536	50.0%	31.6	6.5	C
	Right Turn	424	205	48.4%	30.8	6.7	C
	Subtotal	1,497	742	49.5%	31.4	6.5	C
SB	Left Turn	90	85	94.4%	32.5	4.0	C
	Through	726	720	99.2%	7.4	0.5	A
	Right Turn						
	Subtotal	816	805	98.6%	10.1	0.6	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	517	491	95.0%	22.8	0.8	C
	Through						
	Right Turn	30	31	103.0%	5.9	1.4	A
	Subtotal	547	522	95.4%	21.8	0.8	C
Total		2,860	2,068	72.3%	20.7	2.3	C

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,693	369	21.8%	18.1	6.1	B
	Right Turn	40	10	23.8%	16.8	5.5	B
	Subtotal	1,733	379	21.8%	18.0	6.1	B
SB	Left Turn	120	108	89.7%	72.0	28.3	E
	Through	1,418	1,361	96.0%	88.3	33.4	F
	Right Turn						
	Subtotal	1,538	1,468	95.5%	87.1	33.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	160	156	97.6%	54.7	14.8	D
	Through						
	Right Turn	80	82	102.8%	23.8	10.1	C
	Subtotal	240	238	99.4%	44.0	13.0	D
Total		3,511	2,085	59.4%	69.7	24.1	E

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	190	4	2.2%	2801.6	611.1	F
	Through	1,772	309	17.4%	7.5	5.7	A
	Right Turn	170	29	16.9%	2.5	0.4	A
	Subtotal	2,132	342	16.0%	35.3	20.9	E
SB	Left Turn						
	Through	1,344	1,292	96.1%	17.1	2.1	C
	Right Turn	234	221	94.5%	19.5	1.6	C
	Subtotal	1,578	1,513	95.9%	17.4	1.9	C
EB	Left Turn						
	Through						
	Right Turn	470	471	100.3%	2.1	0.7	A
	Subtotal	470	471	100.3%	2.1	0.7	A
WB	Left Turn						
	Through						
	Right Turn	30	27	90.8%	5.7	2.2	A
	Subtotal	30	27	90.8%	5.7	2.2	A
Total		4,210	2,353	55.9%	16.8	2.8	C

Intersection 9 **I-80 WB Ramps/Fairgrounds Dr-Redwook Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SW	Left Turn	326	75	22.9%	1112.6	210.8	F
	Through						
	Right Turn	210	53	25.5%	957.1	180.2	F
	Subtotal	536	128	23.9%	1044.4	181.3	F
SB	Left Turn	90	33	37.1%	767.8	201.1	F
	Through	120	58	48.7%	475.6	167.6	F
	Right Turn	90	36	40.4%	546.1	147.0	F
	Subtotal	300	128	42.7%	569.5	154.8	F
EB	Left Turn	70	9	12.4%	1581.2	432.4	F
	Through	928	123	13.3%	1513.0	320.9	F
	Right Turn	440	58	13.1%	630.3	203.2	F
	Subtotal	1,438	189	13.2%	1253.8	290.2	F
WB	Left Turn	689	520	75.4%	202.7	25.4	F
	Through	1,119	870	77.8%	23.6	1.4	C
	Right Turn	180	144	79.9%	23.6	1.7	C
	Subtotal	1,988	1,534	77.1%	84.4	9.5	F
Total		4,262	1,979	46.4%	277.2	15.5	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	735	168	22.9%	894.6	130.4	F
	Right Turn	150	35	23.1%	487.6	176.1	F
	Subtotal	885	203	22.9%	822.8	125.1	F
SB	Left Turn	276	257	93.0%	96.0	26.9	F
	Through						
	Right Turn	1,538	1,479	96.1%	59.3	6.3	E
	Subtotal	1,814	1,735	95.7%	64.7	8.0	E
EB	Left Turn	924	131	14.2%	693.1	169.5	F
	Through	420	77	18.4%	20.1	11.3	C
	Right Turn						
	Subtotal	1,344	209	15.5%	438.3	96.7	F
WB	Left Turn						
	Through	450	68	15.1%	439.1	117.8	F
	Right Turn	473	40	8.5%	751.3	262.3	F
	Subtotal	923	108	11.7%	551.8	162.2	F
Total		4,966	2,255	45.4%	184.9	10.6	F

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	220	21	9.5%	2106.1	620.1	F
	Through	20	2	9.9%	1686.2	1240.2	F
	Right Turn	100	11	11.1%	1750.5	707.6	F
	Subtotal	340	34	10.0%	1875.9	565.6	F
SB	Left Turn						
	Through	20	6	28.2%	1480.3	736.4	F
	Right Turn	10	3	25.7%	1647.6	816.5	F
	Subtotal	30	8	27.4%	1417.9	662.3	F
EB	Left Turn	40	16	40.1%	258.4	616.3	F
	Through	636	299	47.0%	13.1	7.9	B
	Right Turn	150	64	42.6%	9.6	3.8	A
	Subtotal	826	379	45.9%	15.2	8.5	B
WB	Left Turn	70	10	13.9%	480.1	543.0	F
	Through	653	78	11.9%	1001.2	232.3	F
	Right Turn						
	Subtotal	723	87	12.1%	938.4	242.6	F
Total		1,919	508	26.5%	284.7	45.3	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,588	419	26.4%	3.3	0.7	A
	Right Turn	185	51	27.6%	3.2	0.9	A
	Subtotal	1,773	470	26.5%	3.3	0.8	A
SB	Left Turn	17	17	99.0%	20.2	10.8	C
	Through	1,538	1,462	95.0%	29.1	16.6	D
	Right Turn						
	Subtotal	1,555	1,478	95.1%	29.0	16.5	D
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	156	166	106.2%	8.2	3.0	A
	Subtotal	156	166	106.2%	8.2	3.0	A
Total		3,484	2,115	60.7%	21.6	11.6	C

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,405	467	33.2%	15.0	5.4	B
	Right Turn	339	121	35.8%	13.3	5.4	B
	Subtotal	1,744	588	33.7%	14.6	5.4	B
SB	Left Turn	87	85	98.1%	16.1	3.4	B
	Through	1,170	1,133	96.8%	14.3	5.8	B
	Right Turn						
	Subtotal	1,257	1,218	96.9%	14.4	5.6	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	385	361	93.7%	118.7	93.3	F
	Through						
	Right Turn	209	209	99.9%	7.7	1.8	A
	Subtotal	594	570	95.9%	77.7	59.7	E
Total		3,595	2,376	66.1%	29.5	16.9	C

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Near Term Plus Project**
Volume and Delay by Movement **Saturday Midday**

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,341	563	42.0%	3.0	0.3	A
	Right Turn	273	115	42.2%	2.7	0.2	A
	Subtotal	1,614	678	42.0%	3.0	0.3	A
SB	Left Turn	69	69	100.3%	8.8	1.1	A
	Through	1,161	1,145	98.6%	2.0	0.5	A
	Right Turn						
	Subtotal	1,230	1,214	98.7%	2.4	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	96	94	98.1%	90.0	69.0	F
	Through						
	Right Turn	156	158	101.0%	7.1	1.1	A
	Subtotal	252	252	99.9%	38.8	28.3	E
Total		3,096	2,144	69.2%	6.9	3.5	A

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	200	192	95.8%	5.6	1.0	A
	Right Turn	110	109	99.3%	4.7	1.7	A
	Subtotal	310	301	97.0%	5.3	0.9	A
SB	Left Turn	50	51	101.6%	11.2	3.5	B
	Through	190	192	101.1%	1.7	0.5	A
	Right Turn						
	Subtotal	240	243	101.2%	3.7	0.7	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	90	86	95.1%	10.9	2.6	B
	Through						
	Right Turn	50	50	99.0%	3.8	0.8	A
	Subtotal	140	135	96.5%	8.8	2.0	A
Total		690	679	98.4%	5.4	0.5	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	300	291	97.1%	1.8	0.3	A
	Right Turn	40	40	100.8%	1.9	0.7	A
	Subtotal	340	332	97.5%	1.8	0.3	A
SB	Left Turn						
	Through	280	274	97.8%	0.6	0.1	A
	Right Turn						
	Subtotal	280	274	97.8%	0.6	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	120.0%	4.6	2.5	A
	Subtotal	10	12	120.0%	4.6	2.5	A
Total		630	617	98.0%	1.3	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	320	315	98.4%	8.1	1.5	A
	Right Turn	140	136	96.8%	7.5	1.4	A
	Subtotal	460	450	97.9%	7.9	1.3	A
SB	Left Turn	40	42	104.3%	18.0	5.6	B
	Through	240	232	96.5%	3.3	0.9	A
	Right Turn						
	Subtotal	280	273	97.6%	5.7	1.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	160	150	93.5%	14.2	2.7	B
	Through						
	Right Turn	20	18	91.0%	3.8	2.1	A
	Subtotal	180	168	93.2%	13.1	2.5	B
Total		920	891	96.9%	8.2	0.9	A

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	410	408	99.4%	7.8	1.3	A
	Right Turn	80	75	94.0%	7.3	1.5	A
	Subtotal	490	483	98.6%	7.7	1.1	A
SB	Left Turn	60	59	98.0%	12.0	2.5	B
	Through	340	321	94.5%	4.7	1.1	A
	Right Turn						
	Subtotal	400	380	95.0%	5.9	1.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	160	158	98.8%	9.7	1.4	A
	Through						
	Right Turn	50	56	111.0%	4.5	1.4	A
	Subtotal	210	214	101.7%	8.4	1.1	A
Total		1,100	1,077	97.9%	7.2	0.7	A

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	550	532	96.7%	1.5	0.2	A
	Right Turn						
	Subtotal	550	532	96.7%	1.5	0.2	A
SB	Left Turn						
	Through	560	551	98.5%	0.3	0.1	A
	Right Turn						
	Subtotal	560	551	98.5%	0.3	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,110	1,083	97.6%	0.9	0.1	A

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	310	68	21.9%	694.4	54.1	F
	Through						
	Right Turn	150	31	20.9%	669.4	93.6	F
	Subtotal	460	99	21.6%	681.3	55.6	F
EB	Left Turn	100	100	100.2%	34.5	4.8	C
	Through	1,105	1,083	98.0%	102.9	52.3	F
	Right Turn						
	Subtotal	1,205	1,183	98.2%	97.0	47.4	F
WB	Left Turn						
	Through	1,075	1,066	99.1%	6.5	0.9	A
	Right Turn	210	207	98.7%	2.0	0.5	A
	Subtotal	1,285	1,273	99.1%	5.8	0.8	A
Total		2,950	2,555	86.6%	65.6	25.9	E

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	140	130	92.8%	36.8	5.3	D
	Through						
	Right Turn	420	411	97.7%	14.5	1.5	B
	Subtotal	560	540	96.5%	20.1	1.7	C
EB	Left Turn	550	532	96.7%	18.2	1.2	B
	Through	440	438	99.5%	2.2	0.3	A
	Right Turn						
	Subtotal	990	969	97.9%	11.1	1.0	B
WB	Left Turn						
	Through	870	834	95.9%	69.8	15.1	E
	Right Turn						
	Subtotal	870	834	95.9%	69.8	15.1	E
Total		2,420	2,344	96.9%	34.6	4.7	C

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	170	159	93.4%	155.5	92.5	F
	Through						
	Right Turn	110	106	96.1%	86.8	81.0	F
	Subtotal	280	265	94.5%	127.7	88.9	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	20	19	95.5%	45.4	12.0	D
	Through	460	451	98.1%	15.0	3.4	B
	Right Turn	150	145	96.5%	13.1	3.1	B
	Subtotal	630	615	97.7%	15.3	3.1	B
WB	Left Turn	150	146	97.5%	120.3	52.5	F
	Through	700	681	97.3%	102.0	73.7	F
	Right Turn						
	Subtotal	850	827	97.3%	105.4	68.4	F
Total		1,760	1,707	97.0%	76.6	42.5	E

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	340	328	96.5%	9.7	0.9	A
	Right Turn	230	215	93.4%	7.5	0.7	A
	Subtotal	570	543	95.2%	8.8	0.7	A
SB	Left Turn	60	58	96.9%	21.6	3.0	C
	Through	400	411	102.8%	4.5	0.4	A
	Right Turn						
	Subtotal	460	469	102.0%	6.6	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	240	239	99.5%	15.8	1.3	B
	Through						
	Right Turn	80	80	99.9%	3.6	0.3	A
	Subtotal	320	319	99.6%	12.7	1.0	B
Total		1,350	1,331	98.6%	9.0	0.5	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	560	533	95.2%	2.5	0.1	A
	Right Turn	60	56	92.6%	2.6	0.2	A
	Subtotal	620	589	95.0%	2.5	0.1	A
SB	Left Turn						
	Through	640	641	100.1%	1.1	0.1	A
	Right Turn						
	Subtotal	640	641	100.1%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	92.1%	4.1	1.9	A
	Subtotal	10	9	92.1%	4.1	1.9	A
Total		1,270	1,239	97.6%	1.8	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	590	574	97.3%	13.0	0.7	B
	Right Turn	320	304	95.1%	11.9	0.8	B
	Subtotal	910	878	96.5%	12.6	0.6	B
SB	Left Turn	50	49	97.0%	31.8	3.3	C
	Through	590	594	100.6%	5.7	0.4	A
	Right Turn						
	Subtotal	640	642	100.3%	7.7	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	470	448	95.4%	24.2	1.1	C
	Through						
	Right Turn	30	32	106.9%	5.6	1.1	A
	Subtotal	500	480	96.0%	23.0	1.1	C
Total		2,050	2,001	97.6%	13.5	0.4	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	830	792	95.4%	10.8	0.6	B
	Right Turn	80	76	94.9%	9.7	1.2	A
	Subtotal	910	868	95.4%	10.7	0.6	B
SB	Left Turn	110	109	98.8%	26.4	4.0	D
	Through	950	955	100.6%	10.3	0.7	B
	Right Turn						
	Subtotal	1,060	1,064	100.4%	12.0	1.1	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	200	192	96.1%	15.9	1.3	C
	Through						
	Right Turn	80	86	108.0%	9.3	1.0	A
	Subtotal	280	279	99.5%	13.8	1.1	B
Total		2,250	2,211	98.3%	11.7	0.8	B

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	920	867	94.2%	2.7	0.1	A
	Right Turn	150	139	92.4%	2.7	0.2	A
	Subtotal	1,070	1,005	94.0%	2.7	0.1	A
SB	Left Turn						
	Through	1,200	1,196	99.7%	2.1	0.9	A
	Right Turn						
	Subtotal	1,200	1,196	99.7%	2.1	0.9	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	21	103.0%	9.4	2.4	A
	Subtotal	20	21	103.0%	9.4	2.4	A
Total		2,290	2,222	97.1%	2.4	0.5	A

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	270	277	102.4%	39.4	2.5	D
	Through						
	Right Turn	80	78	97.6%	34.2	3.4	C
	Subtotal	350	355	101.3%	38.3	2.5	D
EB	Left Turn	80	78	97.8%	43.0	4.0	D
	Through	1,370	1,349	98.5%	10.9	1.7	B
	Right Turn						
	Subtotal	1,450	1,428	98.5%	12.7	1.6	B
WB	Left Turn						
	Through	1,440	1,824	126.7%	6.9	0.2	A
	Right Turn	220	206	93.5%	2.6	0.2	A
	Subtotal	1,660	2,030	122.3%	6.5	0.2	A
Total		3,460	3,813	110.2%	11.8	0.6	B

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	150	148	98.7%	40.9	2.3	D
	Through						
	Right Turn	1,050	1,025	97.6%	28.8	4.2	C
	Subtotal	1,200	1,173	97.8%	30.3	3.7	C
EB	Left Turn	865	857	99.1%	24.3	1.2	C
	Through	720	747	103.7%	3.1	0.2	A
	Right Turn						
	Subtotal	1,585	1,604	101.2%	14.4	0.9	B
WB	Left Turn						
	Through	595	472	79.4%	126.6	16.0	F
	Right Turn	205	149	72.5%	112.2	14.1	F
	Subtotal	800	621	77.6%	123.2	15.7	F
Total		3,585	3,398	94.8%	39.6	2.5	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	250	207	82.9%	392.6	71.6	F
	Through						
	Right Turn	70	60	86.3%	351.6	74.3	F
	Subtotal	320	268	83.6%	383.4	71.5	F
SB	Left Turn						
	Through						
	Right Turn	10	11	112.9%	32.0	12.1	C
	Subtotal	10	11	112.9%	32.0	12.1	C
EB	Left Turn	20	19	96.0%	49.1	4.7	D
	Through	610	624	102.3%	20.7	1.3	C
	Right Turn	200	198	99.0%	17.5	2.2	B
	Subtotal	830	842	101.4%	20.5	1.3	C
WB	Left Turn	60	46	77.1%	299.3	48.3	F
	Through	530	401	75.7%	487.4	68.2	F
	Right Turn	10	7	69.3%	508.9	137.3	F
	Subtotal	600	454	75.7%	468.9	66.9	F
Total		1,760	1,575	89.5%	209.4	15.2	F

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	150	146	97.4%	36.5	7.3	D
	Through						
	Right Turn	250	264	105.8%	37.7	8.4	D
	Subtotal	400	410	102.6%	37.3	7.9	D
EB	Left Turn						
	Through	980	998	101.8%	6.0	0.6	A
	Right Turn	660	662	100.2%	4.0	0.3	A
	Subtotal	1,640	1,659	101.2%	5.2	0.5	A
WB	Left Turn						
	Through	1,910	1,766	92.5%	12.4	0.7	B
	Right Turn						
	Subtotal	1,910	1,766	92.5%	12.4	0.7	B
Total		3,950	3,836	97.1%	12.0	1.3	B

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	450	451	100.2%	46.0	7.9	D
	Through						
	Right Turn	620	619	99.9%	38.9	5.8	D
	Subtotal	1,070	1,070	100.0%	41.9	6.6	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	165	157	95.3%	39.6	3.5	D
	Through	965	956	99.1%	10.2	0.7	B
	Right Turn						
	Subtotal	1,130	1,113	98.5%	14.4	1.1	B
WB	Left Turn						
	Through	1,460	1,340	91.8%	44.6	2.1	D
	Right Turn	185	172	93.1%	12.4	0.7	B
	Subtotal	1,645	1,512	91.9%	40.9	2.1	D
Total		3,845	3,696	96.1%	33.2	2.1	C

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	430	386	89.7%	11.4	0.7	B
	Right Turn	270	237	87.7%	9.1	0.9	A
	Subtotal	700	623	88.9%	10.5	0.7	B
SB	Left Turn	80	77	95.7%	25.5	2.2	C
	Through	410	416	101.3%	5.4	0.4	A
	Right Turn						
	Subtotal	490	492	100.4%	8.5	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	290	289	99.5%	18.1	1.0	B
	Through						
	Right Turn	110	109	98.7%	4.1	0.6	A
	Subtotal	400	397	99.3%	14.3	1.0	B
Total		1,590	1,512	95.1%	10.9	0.5	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	680	606	89.1%	2.4	0.2	A
	Right Turn	40	38	94.5%	2.7	0.2	A
	Subtotal	720	644	89.4%	2.5	0.1	A
SB	Left Turn						
	Through	700	697	99.5%	1.1	0.1	A
	Right Turn						
	Subtotal	700	697	99.5%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	18	89.1%	5.0	1.4	A
	Subtotal	20	18	89.1%	5.0	1.4	A
Total		1,440	1,358	94.3%	1.8	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	670	607	90.6%	14.3	0.9	B
	Right Turn	330	293	88.7%	14.2	1.8	B
	Subtotal	1,000	900	90.0%	14.2	1.1	B
SB	Left Turn	100	103	102.8%	34.5	1.9	C
	Through	600	593	98.9%	5.1	0.3	A
	Right Turn						
	Subtotal	700	696	99.4%	9.4	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	450	446	99.1%	28.8	1.9	C
	Through						
	Right Turn	50	53	105.7%	6.7	1.9	A
	Subtotal	500	499	99.8%	26.4	1.6	C
Total		2,200	2,094	95.2%	15.6	0.6	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	900	794	88.3%	10.4	0.6	B
	Right Turn	90	77	85.1%	9.1	0.8	A
	Subtotal	990	871	88.0%	10.2	0.6	B
SB	Left Turn	100	95	95.2%	25.2	3.7	D
	Through	950	958	100.8%	10.2	1.2	B
	Right Turn						
	Subtotal	1,050	1,053	100.3%	11.6	1.0	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	250	238	95.2%	18.4	1.4	C
	Through						
	Right Turn	100	99	99.0%	8.8	1.2	A
	Subtotal	350	337	96.3%	15.6	1.1	C
Total		2,390	2,261	94.6%	11.7	0.7	B

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	970	827	85.3%	2.5	0.1	A
	Right Turn	170	144	84.8%	2.6	0.2	A
	Subtotal	1,140	971	85.2%	2.5	0.1	A
SB	Left Turn						
	Through	1,280	1,285	100.4%	2.1	1.2	A
	Right Turn						
	Subtotal	1,280	1,285	100.4%	2.1	1.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	40	43	106.4%	9.0	1.3	A
	Subtotal	40	43	106.4%	9.0	1.3	A
Total		2,460	2,299	93.4%	2.4	0.7	A

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	400	107	26.7%	1070.4	90.0	F
	Through						
	Right Turn	120	35	28.8%	923.7	126.9	F
	Subtotal	520	141	27.2%	1033.6	81.0	F
EB	Left Turn	90	94	104.1%	46.3	4.8	D
	Through	1,710	1,639	95.8%	88.3	43.7	F
	Right Turn						
	Subtotal	1,800	1,733	96.3%	86.0	41.4	F
WB	Left Turn						
	Through	1,430	1,306	91.4%	7.5	0.2	A
	Right Turn	230	206	89.7%	2.2	0.2	A
	Subtotal	1,660	1,513	91.1%	6.7	0.2	A
Total		3,980	3,387	85.1%	89.8	20.3	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	195	189	97.1%	40.3	3.3	D
	Through						
	Right Turn	1,085	1,079	99.4%	26.1	7.1	C
	Subtotal	1,280	1,268	99.1%	28.2	6.3	C
EB	Left Turn	870	802	92.2%	22.0	0.9	C
	Through	1,015	942	92.8%	3.1	0.1	A
	Right Turn						
	Subtotal	1,885	1,744	92.5%	11.8	0.6	B
WB	Left Turn						
	Through	580	381	65.6%	153.3	38.5	F
	Right Turn	270	169	62.8%	124.4	32.3	F
	Subtotal	850	550	64.7%	144.4	36.5	F
Total		4,015	3,562	88.7%	37.3	5.0	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	106	33.3%	927.7	311.4	F
	Through						
	Right Turn	120	36	30.4%	764.8	282.0	F
	Subtotal	440	143	32.5%	887.1	303.8	F
SB	Left Turn						
	Through						
	Right Turn	10	10	102.0%	45.5	17.6	D
	Subtotal	10	10	102.0%	45.5	17.6	D
EB	Left Turn	30	29	95.4%	52.3	10.2	D
	Through	910	846	92.9%	19.1	0.8	B
	Right Turn	220	207	94.0%	16.7	1.6	B
	Subtotal	1,160	1,081	93.2%	19.5	1.0	B
WB	Left Turn	60	49	81.5%	222.4	108.2	F
	Through	510	426	83.6%	415.8	206.4	F
	Right Turn						
	Subtotal	570	475	83.4%	395.7	194.6	F
Total		2,180	1,709	78.4%	182.3	58.6	F

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	200	169	84.5%	361.4	164.3	F
	Through						
	Right Turn	240	209	87.0%	404.7	160.0	F
	Subtotal	440	378	85.9%	385.3	161.9	F
EB	Left Turn						
	Through	1,160	1,010	87.1%	13.1	0.5	B
	Right Turn	950	768	80.9%	10.7	0.3	B
	Subtotal	2,110	1,778	84.3%	12.1	0.2	B
WB	Left Turn	500	455	90.9%	32.2	1.6	C
	Through	1,420	1,280	90.1%	7.9	0.3	A
	Right Turn						
	Subtotal	1,920	1,734	90.3%	14.2	0.7	B
Total		4,470	3,891	87.0%	48.9	15.1	D

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	455	456	100.3%	38.7	2.6	D
	Through						
	Right Turn	725	728	100.4%	33.7	2.7	C
	Subtotal	1,180	1,185	100.4%	35.6	2.6	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	200	173	86.3%	31.9	2.7	C
	Through	1,160	981	84.6%	5.2	0.4	A
	Right Turn						
	Subtotal	1,360	1,154	84.9%	9.2	0.9	A
WB	Left Turn						
	Through	1,465	1,299	88.7%	46.1	4.3	D
	Right Turn	200	178	88.8%	8.4	0.7	A
	Subtotal	1,665	1,476	88.7%	41.5	4.0	D
Total		4,205	3,815	90.7%	20.0	1.9	C

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	500	445	89.0%	15.3	1.4	B
	Right Turn	250	218	87.2%	11.1	1.1	B
	Subtotal	750	663	88.4%	13.9	1.1	B
SB	Left Turn	140	122	87.4%	25.6	1.9	C
	Through	510	475	93.2%	5.6	0.6	A
	Right Turn						
	Subtotal	650	598	92.0%	9.7	0.8	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	290	286	98.5%	19.0	1.4	B
	Through						
	Right Turn	160	155	97.1%	4.6	0.7	A
	Subtotal	450	441	98.0%	14.0	1.1	B
Total		1,850	1,702	92.0%	12.4	0.8	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	735	643	87.5%	2.6	0.2	A
	Right Turn	50	45	89.9%	2.9	0.3	A
	Subtotal	785	688	87.6%	2.6	0.2	A
SB	Left Turn						
	Through	800	749	93.6%	1.1	0.1	A
	Right Turn						
	Subtotal	800	749	93.6%	1.1	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	23	114.8%	5.7	0.9	A
	Subtotal	20	23	114.8%	5.7	0.9	A
Total		1,605	1,460	91.0%	1.9	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	750	668	89.0%	17.3	1.9	B
	Right Turn	410	359	87.6%	19.4	3.3	B
	Subtotal	1,160	1,027	88.5%	18.0	2.4	B
SB	Left Turn	100	90	89.6%	33.9	2.2	C
	Through	700	659	94.1%	5.6	0.4	A
	Right Turn						
	Subtotal	800	748	93.5%	9.0	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	514	88.6%	30.5	1.9	C
	Through						
	Right Turn	40	36	89.3%	8.2	1.1	A
	Subtotal	620	549	88.6%	29.0	2.0	C
Total		2,580	2,325	90.1%	17.7	1.5	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,070	938	87.6%	10.2	0.9	B
	Right Turn	50	41	82.4%	9.0	0.9	A
	Subtotal	1,120	979	87.4%	10.1	0.9	B
SB	Left Turn	140	125	89.1%	59.9	37.5	F
	Through	1,140	1,037	91.0%	47.3	47.5	E
	Right Turn						
	Subtotal	1,280	1,162	90.8%	48.6	46.3	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	190	176	92.8%	69.0	61.7	F
	Through						
	Right Turn	90	85	94.5%	42.4	45.6	E
	Subtotal	280	261	93.3%	60.2	56.2	F
Total		2,680	2,402	89.6%	34.1	27.8	D

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,130	967	85.6%	2.2	0.1	A
	Right Turn	190	157	82.7%	2.2	0.3	A
	Subtotal	1,320	1,124	85.2%	2.2	0.2	A
SB	Left Turn						
	Through	1,330	1,209	90.9%	17.9	7.0	C
	Right Turn						
	Subtotal	1,330	1,209	90.9%	17.9	7.0	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	30	31	102.6%	10.2	2.5	B
	Subtotal	30	31	102.6%	10.2	2.5	B
Total		2,680	2,364	88.2%	10.4	3.5	B

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	250	59	23.7%	1506.3	256.6	F
	Through						
	Right Turn	110	23	21.3%	1365.4	269.9	F
	Subtotal	360	83	23.0%	1466.5	256.3	F
EB	Left Turn	90	81	89.7%	162.6	88.6	F
	Through	1,510	1,436	95.1%	111.5	48.6	F
	Right Turn						
	Subtotal	1,600	1,517	94.8%	114.1	50.0	F
WB	Left Turn						
	Through	1,480	1,317	89.0%	9.2	0.3	A
	Right Turn	180	157	87.2%	2.6	0.4	A
	Subtotal	1,660	1,474	88.8%	8.5	0.2	A
Total		3,620	3,074	84.9%	98.2	24.0	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	165	148	89.9%	77.2	17.6	E
	Through						
	Right Turn	1,165	1,036	88.9%	90.9	22.3	F
	Subtotal	1,330	1,185	89.1%	89.2	21.7	F
EB	Left Turn	1,050	952	90.7%	15.6	0.4	B
	Through	735	700	95.2%	2.6	0.2	A
	Right Turn						
	Subtotal	1,785	1,652	92.5%	10.1	0.3	B
WB	Left Turn						
	Through	570	388	68.0%	149.1	10.1	F
	Right Turn	270	172	63.6%	116.0	8.0	F
	Subtotal	840	559	66.6%	139.0	9.2	F
Total		3,955	3,396	85.9%	58.8	7.7	E

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	250	249	99.6%	41.6	3.3	D
	Through						
	Right Turn	110	113	102.9%	10.2	1.6	B
	Subtotal	360	362	100.6%	31.8	2.9	C
SB	Left Turn						
	Through						
	Right Turn	10	10	98.0%	23.0	8.1	C
	Subtotal	10	10	98.0%	23.0	8.1	C
EB	Left Turn	40	36	91.1%	50.4	5.0	D
	Through	660	622	94.2%	13.0	2.2	B
	Right Turn	170	155	91.1%	10.3	2.9	B
	Subtotal	870	813	93.4%	14.1	2.4	B
WB	Left Turn	80	48	59.6%	375.8	100.9	F
	Through	540	295	54.6%	664.8	135.4	F
	Right Turn						
	Subtotal	620	343	55.3%	624.5	125.9	F
Total		1,860	1,528	82.1%	153.1	19.5	F

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	160	153	95.9%	40.8	5.6	D
	Through						
	Right Turn	250	247	98.7%	43.4	7.1	D
	Subtotal	410	400	97.6%	42.4	6.0	D
EB	Left Turn						
	Through	1,100	978	88.9%	16.6	0.6	B
	Right Turn	660	542	82.2%	13.1	0.7	B
	Subtotal	1,760	1,521	86.4%	15.3	0.5	B
WB	Left Turn	620	516	83.3%	37.0	1.4	D
	Through	1,410	1,207	85.6%	14.2	0.7	B
	Right Turn						
	Subtotal	2,030	1,723	84.9%	21.0	0.7	C
Total		4,200	3,644	86.8%	21.0	0.8	C

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	465	438	94.2%	203.2	21.1	F
	Through						
	Right Turn	705	676	95.9%	166.0	20.8	F
	Subtotal	1,170	1,114	95.2%	180.7	20.8	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	180	160	89.0%	64.5	4.0	E
	Through	1,080	952	88.1%	5.6	0.2	A
	Right Turn						
	Subtotal	1,260	1,112	88.3%	14.1	1.0	B
WB	Left Turn						
	Through	1,565	1,302	83.2%	53.1	1.4	D
	Right Turn	170	131	77.3%	8.7	0.5	A
	Subtotal	1,735	1,433	82.6%	49.1	1.4	D
Total		4,165	3,659	87.9%	78.5	6.2	E

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	260	243	93.5%	5.7	0.6	A
	Right Turn	110	107	97.1%	4.3	0.8	A
	Subtotal	370	350	94.6%	5.2	0.5	A
SB	Left Turn	50	46	92.6%	13.1	5.5	B
	Through	210	208	99.0%	2.2	0.4	A
	Right Turn						
	Subtotal	260	254	97.7%	4.1	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	90	84	93.3%	11.5	3.2	B
	Through						
	Right Turn	50	53	105.8%	3.7	0.7	A
	Subtotal	140	137	97.8%	8.5	2.1	A
Total		770	741	96.2%	5.5	0.7	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	360	343	95.3%	1.7	0.3	A
	Right Turn	40	39	98.0%	1.6	0.4	A
	Subtotal	400	382	95.6%	1.7	0.2	A
SB	Left Turn						
	Through	300	292	97.4%	0.8	0.1	A
	Right Turn						
	Subtotal	300	292	97.4%	0.8	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	8	78.0%	3.9	3.2	A
	Subtotal	10	8	78.0%	2.7	1.9	A
Total		710	682	96.1%	1.3	0.2	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	380	364	95.8%	12.7	1.5	B
	Right Turn	182	168	92.2%	11.6	1.8	B
	Subtotal	562	532	94.6%	12.4	1.4	B
SB	Left Turn	40	37	91.3%	53.6	13.5	D
	Through	260	255	98.1%	3.3	0.7	A
	Right Turn						
	Subtotal	300	292	97.2%	9.9	2.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	196	187	95.6%	32.7	7.5	C
	Through						
	Right Turn	20	20	98.5%	4.0	2.2	A
	Subtotal	216	207	95.9%	30.1	7.1	C
Total		1,078	1,030	95.6%	15.3	2.0	B

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	562	532	94.7%	6.7	1.1	A
	Right Turn	80	78	97.9%	6.7	1.8	A
	Subtotal	642	611	95.1%	6.7	1.1	A
SB	Left Turn	60	57	95.7%	16.0	2.6	C
	Through	437	425	97.3%	5.4	1.3	A
	Right Turn						
	Subtotal	497	483	97.1%	6.8	1.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	160	155	97.1%	29.8	3.9	D
	Through						
	Right Turn	50	50	100.4%	7.9	2.0	A
	Subtotal	210	206	97.9%	24.5	2.9	C
Total		1,349	1,299	96.3%	9.7	1.3	A

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	702	669	95.3%	1.2	0.3	A
	Right Turn						
	Subtotal	702	669	95.3%	1.2	0.3	A
SB	Left Turn						
	Through	657	638	97.0%	0.3	0.0	A
	Right Turn						
	Subtotal	657	638	97.0%	0.3	0.0	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,359	1,307	96.2%	0.8	0.2	A

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	310	223	72.0%	357.6	61.3	F
	Through						
	Right Turn	150	115	76.5%	316.1	85.3	F
	Subtotal	460	338	73.5%	345.6	69.0	F
EB	Left Turn	100	85	85.4%	76.7	17.2	E
	Through	1,123	851	75.8%	309.2	20.7	F
	Right Turn						
	Subtotal	1,223	937	76.6%	288.4	20.8	F
WB	Left Turn						
	Through	1,086	1,022	94.1%	6.3	0.9	A
	Right Turn	210	203	96.5%	1.5	0.3	A
	Subtotal	1,296	1,225	94.5%	5.5	0.8	A
Total		2,979	2,499	83.9%	152.0	7.0	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	152	147	96.8%	49.9	7.7	D
	Through						
	Right Turn	505	489	96.9%	21.2	3.1	C
	Subtotal	657	637	96.9%	28.0	3.0	C
EB	Left Turn	667	636	95.4%	9.7	1.7	A
	Through	440	420	95.4%	2.1	0.4	A
	Right Turn						
	Subtotal	1,107	1,056	95.4%	6.6	1.0	A
WB	Left Turn						
	Through	870	739	85.0%	98.7	5.2	F
	Right Turn	35	30	85.7%	81.5	10.9	F
	Subtotal	905	769	85.0%	98.2	5.1	F
Total		2,669	2,461	92.2%	41.6	1.1	D

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	170	121	71.2%	471.3	111.2	F
	Through						
	Right Turn	110	86	78.2%	415.2	113.4	F
	Subtotal	280	207	73.9%	448.0	112.8	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	20	16	81.5%	62.6	30.7	E
	Through	472	448	95.0%	24.6	2.1	C
	Right Turn	150	146	97.3%	20.9	3.5	C
	Subtotal	642	610	95.1%	24.4	2.3	C
WB	Left Turn	150	140	93.1%	161.5	55.6	F
	Through	735	670	91.1%	208.0	69.9	F
	Right Turn						
	Subtotal	885	809	91.4%	200.0	67.5	F
Total		1,807	1,627	90.0%	149.2	36.5	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	589	559	95.0%	1.8	0.3	A
	Right Turn	23	22	95.2%	2.3	1.2	A
	Subtotal	612	581	95.0%	1.9	0.3	A
SB	Left Turn	3	2	70.0%	2.6	4.8	A
	Through	497	483	97.2%	0.6	0.1	A
	Right Turn						
	Subtotal	500	485	97.0%	0.6	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	22	24	109.5%	3.9	1.1	A
	Subtotal	22	24	109.5%	3.9	1.1	A
Total		1,134	1,090	96.2%	1.4	0.2	A

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	553	520	93.9%	3.8	0.9	A
	Right Turn	58	60	103.4%	3.1	0.9	A
	Subtotal	611	580	94.8%	3.7	0.8	A
SB	Left Turn	13	13	96.2%	4.6	2.2	A
	Through	446	431	96.5%	1.5	0.6	A
	Right Turn						
	Subtotal	459	443	96.5%	1.6	0.6	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	54	53	98.9%	25.2	4.3	C
	Through						
	Right Turn	30	31	103.3%	4.9	1.5	A
	Subtotal	84	84	100.5%	18.4	2.9	B
Total		1,154	1,107	95.9%	4.1	0.8	A

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	540	511	94.6%	1.7	0.3	A
	Right Turn	43	37	86.3%	1.2	0.5	A
	Subtotal	583	548	94.0%	1.6	0.3	A
SB	Left Turn	11	12	107.3%	4.7	3.2	A
	Through	445	433	97.2%	1.0	0.1	A
	Right Turn						
	Subtotal	456	444	97.5%	1.1	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	14	12	82.1%	14.3	13.3	B
	Through						
	Right Turn	22	23	104.5%	3.8	1.4	A
	Subtotal	36	35	95.8%	7.5	2.8	A
Total		1,075	1,027	95.5%	1.6	0.3	A

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	234	231	98.6%	148.6	74.9	F
	Through						
	Right Turn	240	237	98.8%	138.8	83.0	F
	Subtotal	474	468	98.7%	144.0	77.8	F
EB	Left Turn						
	Through	483	395	81.8%	16.4	5.4	B
	Right Turn	950	681	71.7%	12.3	1.0	B
	Subtotal	1,433	1,076	75.1%	13.7	2.3	B
WB	Left Turn	553	513	92.7%	33.1	3.6	C
	Through	1,056	986	93.4%	9.4	0.7	A
	Right Turn						
	Subtotal	1,609	1,499	93.1%	17.8	1.5	B
Total		3,516	3,043	86.5%	36.0	12.8	D

SimTraffic Post-Processor **Fairview at Northgate TIS**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **Weekday AM**

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	455	466	102.5%	44.8	15.6	D
	Through						
	Right Turn	590	597	101.2%	34.8	15.6	C
	Subtotal	1,045	1,064	101.8%	39.2	15.6	D
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	200	178	89.2%	87.0	21.7	F
	Through	517	450	87.0%	7.0	1.7	A
	Right Turn						
	Subtotal	717	628	87.6%	30.8	9.9	C
WB	Left Turn						
	Through	1,154	1,028	89.1%	49.5	6.2	D
	Right Turn	221	199	90.1%	9.8	1.8	A
	Subtotal	1,375	1,227	89.2%	43.3	5.3	D
Total		3,137	2,919	93.1%	39.3	7.0	D

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	679	501	73.8%	10.0	1.3	A
	Right Turn	230	169	73.6%	7.4	1.5	A
	Subtotal	909	671	73.8%	9.4	1.2	A
SB	Left Turn	60	60	99.7%	24.9	4.6	C
	Through	504	490	97.1%	5.6	1.4	A
	Right Turn						
	Subtotal	564	549	97.4%	7.7	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	240	250	104.0%	17.2	2.2	B
	Through						
	Right Turn	80	86	107.1%	4.6	1.2	A
	Subtotal	320	335	104.8%	13.8	2.1	B
Total		1,793	1,556	86.8%	9.7	1.0	A

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	899	661	73.5%	1.7	0.2	A
	Right Turn	50	38	76.6%	2.0	0.6	A
	Subtotal	949	699	73.7%	1.7	0.2	A
SB	Left Turn						
	Through	744	741	99.6%	1.3	0.2	A
	Right Turn						
	Subtotal	744	741	99.6%	1.3	0.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	11	110.0%	4.3	4.9	A
	Subtotal	10	11	110.0%	4.3	4.9	A
Total		1,703	1,451	85.2%	1.5	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	919	667	72.6%	20.1	1.6	C
	Right Turn	435	306	70.4%	20.7	1.7	C
	Subtotal	1,354	973	71.9%	20.3	1.6	C
SB	Left Turn	50	47	94.4%	49.5	11.8	D
	Through	694	693	99.9%	3.6	0.6	A
	Right Turn						
	Subtotal	744	741	99.5%	6.3	1.2	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	457	433	94.8%	148.2	64.5	F
	Through						
	Right Turn	30	31	104.3%	15.9	14.6	B
	Subtotal	487	465	95.4%	139.0	61.6	F
Total		2,585	2,179	84.3%	41.8	12.9	D

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,516	939	61.9%	18.0	6.7	C
	Right Turn	80	48	60.0%	17.9	9.2	C
	Subtotal	1,596	987	61.8%	18.0	6.7	C
SB	Left Turn	110	103	93.7%	117.8	55.5	F
	Through	1,283	1,202	93.7%	124.7	66.2	F
	Right Turn						
	Subtotal	1,393	1,305	93.7%	124.2	65.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	200	202	101.0%	48.6	11.7	E
	Through						
	Right Turn	80	80	100.0%	32.0	11.4	D
	Subtotal	280	282	100.7%	44.4	11.6	E
Total		3,269	2,574	78.7%	75.0	33.7	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,455	967	66.5%	2.5	0.3	A
	Right Turn	150	100	66.5%	2.0	0.5	A
	Subtotal	1,605	1,067	66.5%	2.4	0.3	A
SB	Left Turn						
	Through	1,543	1,414	91.6%	13.9	2.7	B
	Right Turn						
	Subtotal	1,543	1,414	91.6%	13.9	2.7	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,148	2,481	78.8%	8.9	1.5	A

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	270	197	73.0%	343.3	101.3	F
	Through						
	Right Turn	80	63	78.5%	323.2	113.1	F
	Subtotal	350	260	74.3%	338.7	103.2	F
EB	Left Turn	80	55	69.0%	341.4	43.0	F
	Through	1,423	1,017	71.5%	188.2	15.5	F
	Right Turn						
	Subtotal	1,503	1,073	71.4%	195.9	15.7	F
WB	Left Turn						
	Through	2,077	1,580	76.1%	8.8	0.8	A
	Right Turn	220	161	73.3%	3.0	0.5	A
	Subtotal	2,297	1,742	75.8%	8.3	0.7	A
Total		4,150	3,074	74.1%	103.0	7.4	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	264	241	91.3%	80.0	6.8	E
	Through						
	Right Turn	1,279	1,169	91.4%	76.0	10.6	E
	Subtotal	1,543	1,410	91.4%	76.7	8.4	E
EB	Left Turn	1,305	921	70.6%	14.1	1.2	B
	Through	650	451	69.4%	2.3	0.3	A
	Right Turn						
	Subtotal	1,955	1,372	70.2%	10.3	1.0	B
WB	Left Turn						
	Through	672	362	53.9%	160.8	18.5	F
	Right Turn	300	146	48.5%	130.2	18.8	F
	Subtotal	972	508	52.2%	151.5	18.1	F
Total		4,470	3,290	73.6%	59.9	4.3	E

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	250	258	103.1%	47.5	14.3	D
	Through						
	Right Turn	70	70	99.7%	17.2	12.5	B
	Subtotal	320	328	102.3%	42.1	14.8	D
SB	Left Turn						
	Through						
	Right Turn	10	10	101.0%	45.4	23.5	D
	Subtotal	10	10	101.0%	45.4	23.5	D
EB	Left Turn	20	14	71.5%	44.4	20.1	D
	Through	654	498	76.1%	23.2	7.2	C
	Right Turn	200	154	76.8%	17.3	5.8	B
	Subtotal	874	665	76.1%	22.4	6.9	C
WB	Left Turn	60	22	37.2%	407.3	148.7	F
	Through	702	239	34.1%	556.7	93.4	F
	Right Turn	10	3	30.0%	538.2	165.3	F
	Subtotal	772	265	34.3%	540.6	89.1	F
Total		1,976	1,268	64.2%	125.6	16.5	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,471	937	63.7%	3.7	0.6	A
	Right Turn	125	82	65.2%	2.8	0.8	A
	Subtotal	1,596	1,019	63.8%	3.6	0.6	A
SB	Left Turn	14	13	92.1%	35.4	23.5	E
	Through	1,393	1,315	94.4%	52.2	30.8	F
	Right Turn						
	Subtotal	1,407	1,328	94.4%	52.1	30.6	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	125	129	102.9%	12.1	3.5	B
	Subtotal	125	129	102.9%	12.1	3.5	B
Total		3,128	2,475	79.1%	30.4	16.3	D

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,288	851	66.1%	9.5	1.2	A
	Right Turn	308	214	69.6%	10.2	1.1	B
	Subtotal	1,596	1,065	66.7%	9.6	1.1	A
SB	Left Turn	72	68	94.2%	29.9	17.6	C
	Through	1,099	1,066	97.0%	25.0	26.9	C
	Right Turn						
	Subtotal	1,171	1,134	96.8%	25.3	26.2	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	308	283	91.8%	119.0	108.6	F
	Through						
	Right Turn	167	158	94.8%	14.2	6.3	B
	Subtotal	475	441	92.8%	80.3	71.2	F
Total		3,242	2,640	81.4%	25.2	16.1	C

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,229	853	69.4%	3.3	0.5	A
	Right Turn	226	158	69.7%	3.1	0.4	A
	Subtotal	1,455	1,010	69.4%	3.3	0.5	A
SB	Left Turn	57	56	98.8%	18.0	5.2	C
	Through	1,094	1,069	97.7%	2.2	0.3	A
	Right Turn						
	Subtotal	1,151	1,125	97.7%	3.1	0.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	77	75	97.8%	158.6	95.4	F
	Through						
	Right Turn	125	119	95.3%	15.3	8.5	C
	Subtotal	202	194	96.2%	72.4	39.3	F
Total		2,808	2,330	83.0%	9.0	3.6	A

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	310	213	68.7%	390.6	35.0	F
	Through						
	Right Turn	250	178	71.2%	386.4	37.2	F
	Subtotal	560	391	69.8%	387.6	29.4	F
EB	Left Turn						
	Through	1,033	728	70.5%	20.0	3.0	C
	Right Turn	660	489	74.1%	7.2	1.1	A
	Subtotal	1,693	1,217	71.9%	15.0	1.7	B
WB	Left Turn	117	90	77.3%	39.3	7.3	D
	Through	2,047	1,563	76.4%	19.3	1.7	B
	Right Turn						
	Subtotal	2,164	1,654	76.4%	20.4	1.6	C
Total		4,417	3,262	73.8%	62.7	2.2	E

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	520	365	70.1%	210.6	18.6	F
	Through						
	Right Turn	852	589	69.1%	188.2	12.7	F
	Subtotal	1,372	954	69.5%	196.8	13.9	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	240	159	66.3%	75.1	8.3	E
	Through	1,103	780	70.7%	10.8	1.4	B
	Right Turn						
	Subtotal	1,343	939	69.9%	21.8	2.4	C
WB	Left Turn						
	Through	1,644	1,289	78.4%	50.1	4.5	D
	Right Turn	307	235	76.7%	12.8	1.3	B
	Subtotal	1,951	1,525	78.1%	44.5	3.7	D
Total		4,666	3,417	73.2%	80.1	4.4	F

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	830	654	78.8%	12.8	2.4	B
	Right Turn	270	206	76.2%	10.8	1.9	B
	Subtotal	1,100	860	78.2%	12.3	2.3	B
SB	Left Turn	80	76	94.8%	26.4	3.9	C
	Through	540	538	99.7%	5.7	1.2	A
	Right Turn						
	Subtotal	620	614	99.0%	8.1	1.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	290	287	99.0%	20.1	3.0	C
	Through						
	Right Turn	110	109	98.6%	5.4	0.8	A
	Subtotal	400	396	98.9%	16.1	2.6	B
Total		2,120	1,870	88.2%	11.7	1.8	B

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,080	837	77.5%	2.1	0.3	A
	Right Turn	30	26	85.0%	2.7	0.6	A
	Subtotal	1,110	862	77.7%	2.1	0.3	A
SB	Left Turn						
	Through	830	825	99.4%	1.2	0.1	A
	Right Turn						
	Subtotal	830	825	99.4%	1.2	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	22	112.0%	6.2	1.2	A
	Subtotal	20	22	112.0%	6.2	1.2	A
Total		1,960	1,709	87.2%	1.7	0.1	A

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,060	813	76.7%	29.0	4.9	C
	Right Turn	386	292	75.7%	30.6	5.4	C
	Subtotal	1,446	1,105	76.4%	29.4	4.9	C
SB	Left Turn	100	100	100.4%	48.8	6.7	D
	Through	730	722	98.9%	4.5	0.9	A
	Right Turn						
	Subtotal	830	822	99.1%	10.0	1.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	449	448	99.7%	57.9	14.5	E
	Through						
	Right Turn	50	51	101.8%	8.3	3.8	A
	Subtotal	499	499	99.9%	52.9	13.7	D
Total		2,775	2,426	87.4%	27.9	4.3	C

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,624	1,221	75.2%	13.5	3.2	B
	Right Turn	90	67	74.2%	11.8	4.5	B
	Subtotal	1,714	1,287	75.1%	13.4	3.2	B
SB	Left Turn	100	85	85.1%	198.8	49.4	F
	Through	1,356	1,153	85.1%	194.7	49.3	F
	Right Turn						
	Subtotal	1,456	1,238	85.1%	195.1	49.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	250	246	98.3%	46.1	6.4	E
	Through						
	Right Turn	100	98	98.4%	34.6	6.8	D
	Subtotal	350	344	98.3%	42.5	6.3	E
Total		3,520	2,870	81.5%	96.4	19.6	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,380	977	70.8%	2.7	0.3	A
	Right Turn	170	117	68.8%	2.5	0.6	A
	Subtotal	1,550	1,094	70.6%	2.6	0.3	A
SB	Left Turn						
	Through	1,667	1,402	84.1%	20.0	9.4	C
	Right Turn						
	Subtotal	1,667	1,402	84.1%	20.0	9.4	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	40	39	98.0%	9.3	4.6	A
	Subtotal	40	39	98.0%	9.3	4.6	A
Total		3,257	2,535	77.8%	12.4	5.3	B

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	400	47	11.7%	595.2	151.3	F
	Through						
	Right Turn	120	14	11.4%	571.4	150.5	F
	Subtotal	520	61	11.7%	498.6	201.6	F
EB	Left Turn	90	70	78.0%	90.3	27.2	F
	Through	1,777	1,366	76.8%	231.8	15.3	F
	Right Turn						
	Subtotal	1,867	1,436	76.9%	224.0	15.6	F
WB	Left Turn						
	Through	1,798	1,319	73.3%	6.5	0.7	A
	Right Turn	230	165	71.9%	1.7	0.3	A
	Subtotal	2,028	1,484	73.2%	5.9	0.7	A
Total		4,415	2,981	67.5%	123.8	13.9	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	348	297	85.4%	173.8	62.0	F
	Through						
	Right Turn	1,319	1,115	84.5%	84.0	17.7	F
	Subtotal	1,667	1,412	84.7%	102.9	26.4	F
EB	Left Turn	1,346	1,000	74.3%	16.0	0.9	B
	Through	920	687	74.6%	2.9	0.2	A
	Right Turn						
	Subtotal	2,266	1,687	74.4%	10.7	0.7	B
WB	Left Turn						
	Through	834	397	47.6%	167.9	17.2	F
	Right Turn	204	91	44.4%	142.8	20.3	F
	Subtotal	1,038	487	46.9%	163.1	17.3	F
Total		4,971	3,586	72.1%	68.1	10.8	E

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	18	5.6%	793.4	72.6	F
	Through						
	Right Turn	120	7	5.6%	724.6	135.1	F
	Subtotal	440	25	5.6%	679.4	251.8	F
SB	Left Turn						
	Through						
	Right Turn	10	9	85.0%	68.9	59.2	E
	Subtotal	10	9	85.0%	68.9	59.2	E
EB	Left Turn	30	22	71.7%	95.3	35.9	F
	Through	968	742	76.7%	21.4	1.3	C
	Right Turn	220	174	79.0%	18.6	3.1	B
	Subtotal	1,218	938	77.0%	22.6	1.9	C
WB	Left Turn	60	41	68.0%	319.3	60.4	F
	Through	698	455	65.2%	386.4	51.5	F
	Right Turn						
	Subtotal	758	496	65.4%	382.1	50.9	F
Total		2,426	1,467	60.5%	154.1	19.5	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,581	1,201	76.0%	4.5	0.5	A
	Right Turn	143	115	80.1%	4.0	0.8	A
	Subtotal	1,724	1,316	76.3%	4.4	0.4	A
SB	Left Turn	17	15	85.3%	46.1	19.7	E
	Through	1,456	1,247	85.7%	80.6	5.3	F
	Right Turn						
	Subtotal	1,473	1,262	85.7%	80.3	5.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	144	149	103.5%	19.2	5.0	C
	Subtotal	144	149	103.5%	19.2	5.0	C
Total		3,341	2,727	81.6%	40.2	1.9	E

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,370	1,084	79.1%	13.1	2.0	B
	Right Turn	355	267	75.3%	14.1	2.9	B
	Subtotal	1,725	1,351	78.3%	13.3	2.0	B
SB	Left Turn	83	78	94.5%	59.3	15.7	E
	Through	1,119	1,066	95.3%	57.9	30.1	E
	Right Turn						
	Subtotal	1,202	1,145	95.2%	58.0	28.7	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	354	222	62.7%	266.9	70.6	F
	Through						
	Right Turn	192	132	68.5%	29.3	8.4	C
	Subtotal	546	353	64.7%	175.8	38.9	F
Total		3,473	2,850	82.0%	45.6	11.5	D

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,302	1,006	77.3%	3.9	0.4	A
	Right Turn	260	205	79.0%	4.2	0.4	A
	Subtotal	1,562	1,211	77.5%	3.9	0.4	A
SB	Left Turn	66	70	106.5%	31.1	10.8	D
	Through	1,113	1,098	98.6%	11.1	11.1	B
	Right Turn						
	Subtotal	1,179	1,168	99.1%	12.2	10.5	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	89	59	66.5%	409.4	177.5	F
	Through						
	Right Turn	144	97	67.1%	146.7	142.4	F
	Subtotal	233	156	66.9%	254.8	156.6	F
Total		2,974	2,535	85.2%	18.1	4.5	C

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	384	271	70.7%	348.5	24.7	F
	Through						
	Right Turn	240	169	70.5%	356.1	27.8	F
	Subtotal	624	440	70.6%	351.6	21.0	F
EB	Left Turn						
	Through	1,227	827	67.4%	17.4	3.4	B
	Right Turn	950	585	61.5%	12.6	0.7	B
	Subtotal	2,177	1,411	64.8%	15.3	2.0	B
WB	Left Turn	635	471	74.2%	31.6	4.7	C
	Through	1,788	1,310	73.3%	9.7	0.8	A
	Right Turn						
	Subtotal	2,423	1,781	73.5%	15.6	1.4	B
Total		5,224	3,632	69.5%	58.5	1.3	E

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	550	457	83.1%	142.4	8.7	F
	Through						
	Right Turn	915	757	82.7%	136.9	11.3	F
	Subtotal	1,465	1,214	82.9%	139.2	9.2	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	260	175	67.2%	77.0	13.4	E
	Through	1,351	927	68.6%	5.5	0.8	A
	Right Turn						
	Subtotal	1,611	1,101	68.4%	17.2	5.2	B
WB	Left Turn						
	Through	1,873	1,314	70.2%	49.8	3.8	D
	Right Turn	280	199	71.0%	8.4	1.2	A
	Subtotal	2,153	1,513	70.3%	44.4	3.2	D
Total		5,229	3,828	73.2%	66.2	3.4	E

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	934	249	26.7%	98.3	113.7	F
	Right Turn	250	68	27.2%	101.9	127.3	F
	Subtotal	1,184	317	26.8%	98.7	116.1	F
SB	Left Turn	140	53	38.1%	27.2	6.3	C
	Through	636	238	37.3%	7.1	5.0	A
	Right Turn						
	Subtotal	776	291	37.5%	11.1	4.3	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	290	152	52.4%	20.0	5.9	B
	Through						
	Right Turn	160	76	47.3%	64.8	75.8	E
	Subtotal	450	228	50.6%	30.2	18.9	C
Total		2,410	836	34.7%	43.1	36.9	D

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,164	337	28.9%	551.6	349.5	F
	Right Turn	50	14	28.2%	572.7	350.0	F
	Subtotal	1,214	351	28.9%	192.0	243.9	F
SB	Left Turn						
	Through	926	393	42.5%	0.3	0.4	A
	Right Turn						
	Subtotal	926	393	42.5%	0.3	0.4	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	20	10	48.5%	415.2	244.0	F
	Subtotal	20	10	48.5%	15.5	47.4	C
Total		2,160	754	34.9%	52.5	75.3	F

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,174	358	30.5%	992.1	866.6	F
	Right Turn	483	150	31.1%	1008.6	867.3	F
	Subtotal	1,657	509	30.7%	234.8	304.3	F
SB	Left Turn	100	48	47.8%	18.9	28.5	B
	Through	826	350	42.4%	9.2	19.6	A
	Right Turn						
	Subtotal	926	398	43.0%	11.5	19.1	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	584	331	56.7%	305.3	457.2	F
	Through						
	Right Turn	40	20	50.8%	500.1	438.5	F
	Subtotal	624	352	56.3%	156.3	194.9	F
Total		3,207	1,258	39.2%	117.4	127.3	F

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,843	544	29.5%	166.7	177.2	F
	Right Turn	50	15	30.4%	164.5	195.1	F
	Subtotal	1,893	560	29.6%	166.8	177.8	F
SB	Left Turn	140	75	53.6%	144.2	84.6	F
	Through	1,578	797	50.5%	151.4	97.7	F
	Right Turn						
	Subtotal	1,718	872	50.8%	150.7	96.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	190	128	67.2%	236.0	112.9	F
	Through						
	Right Turn	90	58	64.6%	232.4	106.7	F
	Subtotal	280	186	66.4%	233.2	109.6	F
Total		3,891	1,618	41.6%	182.6	83.8	F

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,919	609	31.7%	669.9	347.9	F
	Right Turn	190	62	32.8%	648.8	383.0	F
	Subtotal	2,109	672	31.8%	130.6	246.5	F
SB	Left Turn						
	Through	1,767	946	53.5%	3.2	6.5	A
	Right Turn						
	Subtotal	1,767	946	53.5%	3.2	6.5	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		3,876	1,618	41.7%	45.8	82.0	E

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	250	209	83.4%	451.1	330.7	F
	Through						
	Right Turn	110	97	87.9%	408.2	343.0	F
	Subtotal	360	305	84.8%	196.7	260.6	F
EB	Left Turn	90	39	43.8%	722.6	238.4	F
	Through	1,578	702	44.5%	633.8	275.8	F
	Right Turn						
	Subtotal	1,668	742	44.5%	366.5	324.5	F
WB	Left Turn						
	Through	1,631	692	42.4%	6.0	4.0	A
	Right Turn	180	76	42.3%	1.4	1.4	A
	Subtotal	1,811	768	42.4%	5.6	3.7	A
Total		3,839	1,815	47.3%	155.4	163.4	F

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	231	121	52.4%	97.7	13.5	F
	Through						
	Right Turn	1,536	835	54.4%	82.2	29.3	F
	Subtotal	1,767	956	54.1%	84.4	26.5	F
EB	Left Turn	1,629	471	28.9%	60.8	65.5	E
	Through	735	240	32.6%	1.8	1.7	A
	Right Turn						
	Subtotal	2,364	711	30.1%	34.8	28.3	C
WB	Left Turn						
	Through	652	307	47.1%	111.1	39.4	F
	Right Turn	480	223	46.5%	94.8	25.1	F
	Subtotal	1,132	530	46.8%	104.0	32.4	F
Total		5,263	2,197	41.7%	74.2	14.4	E

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	250	184	73.4%	160.7	94.2	F
	Through						
	Right Turn	110	83	75.4%	111.4	102.6	F
	Subtotal	360	267	74.0%	144.2	97.5	F
SB	Left Turn						
	Through						
	Right Turn	10	8	81.0%	72.4	63.1	E
	Subtotal	10	8	81.0%	60.0	64.6	E
EB	Left Turn	40	13	31.8%	76.4	44.5	E
	Through	726	270	37.2%	28.9	18.4	C
	Right Turn	170	64	37.5%	24.1	25.5	C
	Subtotal	936	346	37.0%	29.8	19.9	C
WB	Left Turn	80	34	42.4%	211.4	82.2	F
	Through	832	333	40.0%	371.8	67.6	F
	Right Turn						
	Subtotal	912	367	40.2%	360.8	68.1	F
Total		2,218	988	44.5%	181.0	32.8	F

Intersection 66 **Admiral Callaghan Ln/Project Access (1)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,782	533	29.9%	144.7	183.0	F
	Right Turn	151	45	29.5%	136.1	241.9	F
	Subtotal	1,933	577	29.9%	143.2	182.9	F
SB	Left Turn	17	8	48.2%	97.5	112.9	F
	Through	1,718	853	49.6%	49.1	35.4	E
	Right Turn						
	Subtotal	1,735	861	49.6%	49.6	34.5	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	156	100	64.0%	240.5	259.6	F
	Subtotal	156	100	64.0%	153.4	145.7	F
Total		3,824	1,538	40.2%	65.9	28.9	F

Intersection 68 **Admiral Callaghan Ln/Project Access (2)** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,565	491	31.4%	214.6	254.7	F
	Right Turn	373	115	30.9%	249.0	262.6	F
	Subtotal	1,938	606	31.3%	130.3	112.1	F
SB	Left Turn	87	39	45.2%	150.4	166.9	F
	Through	1,350	651	48.2%	44.7	32.5	D
	Right Turn						
	Subtotal	1,437	690	48.0%	47.1	30.5	D
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	385	201	52.2%	332.5	277.0	F
	Through						
	Right Turn	209	109	52.2%	278.4	274.4	F
	Subtotal	594	310	52.2%	204.5	167.9	F
Total		3,969	1,606	40.5%	96.6	48.9	F

Intersection 70 **Admiral Callaghan Ln/Project Access (3)** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,501	480	32.0%	314.2	288.1	F
	Right Turn	273	87	31.9%	370.8	307.8	F
	Subtotal	1,774	567	32.0%	229.2	219.3	F
SB	Left Turn	69	32	46.2%	289.2	322.5	F
	Through	1,341	649	48.4%	10.5	17.8	B
	Right Turn						
	Subtotal	1,410	681	48.3%	11.9	17.9	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	96	37	38.2%	619.7	309.4	F
	Through						
	Right Turn	156	58	37.4%	544.8	354.3	F
	Subtotal	252	95	37.7%	217.5	259.3	F
Total		3,436	1,343	39.1%	76.5	58.9	F

Intersection 72 **I-80 SB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	346	50	14.3%	726.8	174.9	F
	Through						
	Right Turn	250	37	14.8%	695.6	179.9	F
	Subtotal	596	87	14.5%	620.2	270.9	F
EB	Left Turn						
	Through	1,168	568	48.6%	21.9	4.3	C
	Right Turn	660	344	52.0%	11.5	1.7	B
	Subtotal	1,828	912	49.9%	18.0	2.6	B
WB	Left Turn	769	391	50.8%	59.8	7.5	E
	Through	1,561	723	46.3%	9.3	4.8	A
	Right Turn						
	Subtotal	2,330	1,113	47.8%	26.9	5.5	C
Total		4,754	2,111	44.4%	45.2	25.7	D

Intersection 75 **I-80 NB Ramp/Redwood Pkwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	465	109	23.5%	559.6	160.0	F
	Through						
	Right Turn	1,030	199	19.3%	735.7	206.0	F
	Subtotal	1,495	308	20.6%	475.4	195.0	F
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn	180	75	41.8%	273.9	359.7	F
	Through	1,334	537	40.3%	431.5	361.8	F
	Right Turn						
	Subtotal	1,514	613	40.5%	255.6	293.8	F
WB	Left Turn						
	Through	1,865	989	53.1%	17.4	20.3	B
	Right Turn	323	166	51.2%	10.8	27.1	B
	Subtotal	2,188	1,155	52.8%	17.1	19.9	B
Total		5,197	2,076	39.9%	175.4	129.9	F

Appendix D:
Signal Warrants



FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	244	233	0	0
Right	28	0	0	6
Total	272	233	0	6

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.4
Approach with Worst Case Delay	WB
Total Vehicles on Approach	6

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**0**	**6**	**511**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

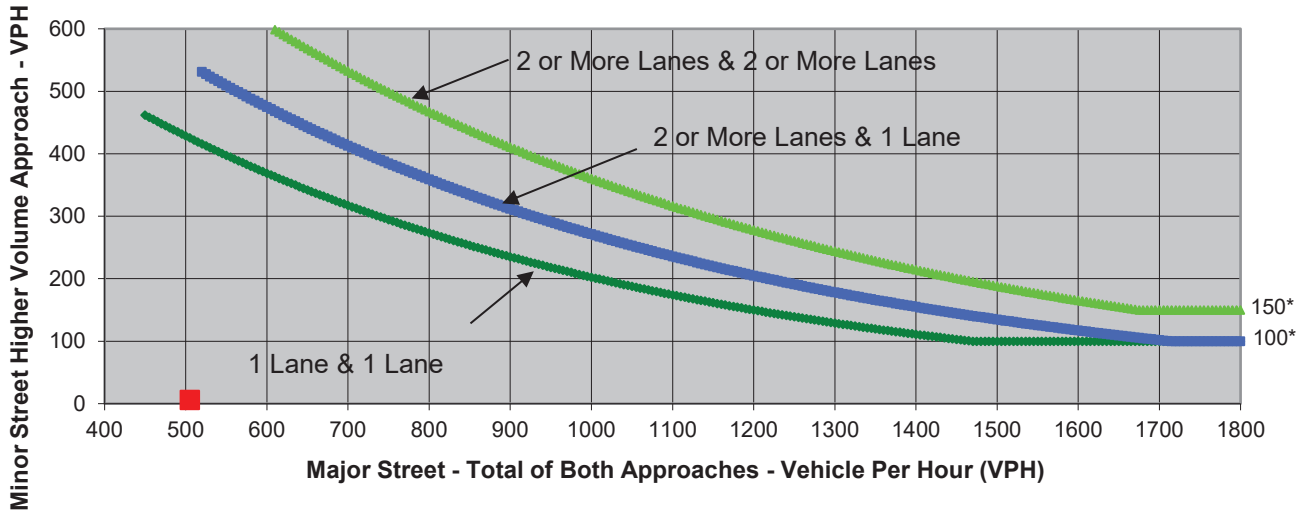
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	244	233	0	0
Right	28	0	0	6
Total	272	233	0	6

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**505**	**6**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	EXNP
Minor Street	Rotary Way
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	45	0	133
Through	335	284	0	0
Right	67	0	0	37
Total	402	329	0	170

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9
Approach with Worst Case Delay	NB
Total Vehicles on Approach	402

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**1**	**170**	**901**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Rotary Way

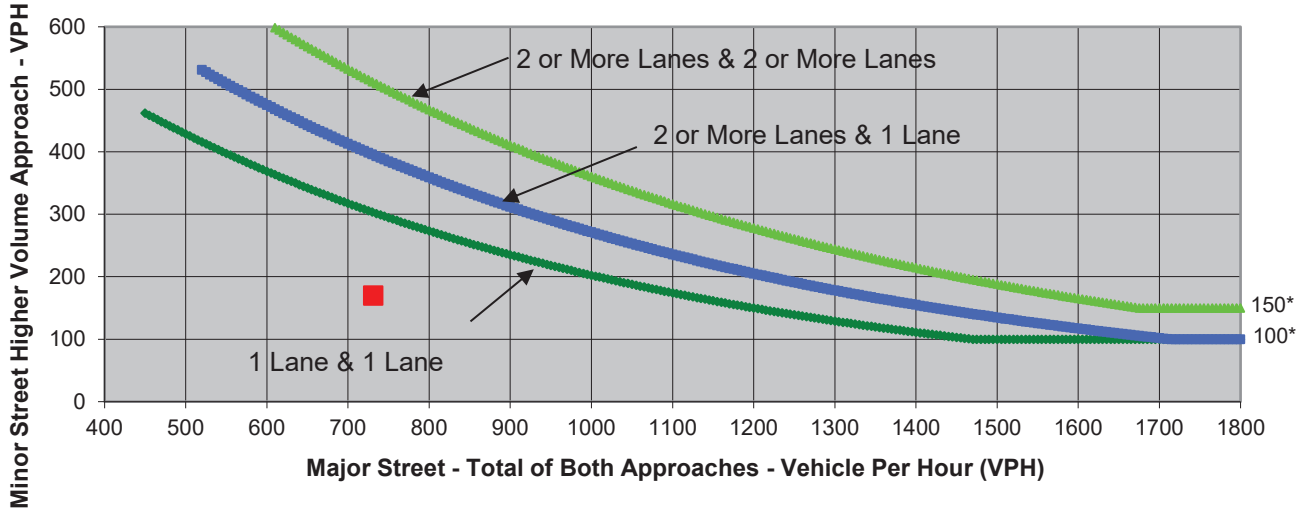
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	45	0	133
Through	335	284	0	0
Right	67	0	0	37
Total	402	329	0	170

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**731**	**170**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXNP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	174	0	0	0
Through	449	362	0	0
Right	92	86	614	14
Total	715	448	614	14

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	715

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**0.9**	**614**	**1,791**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

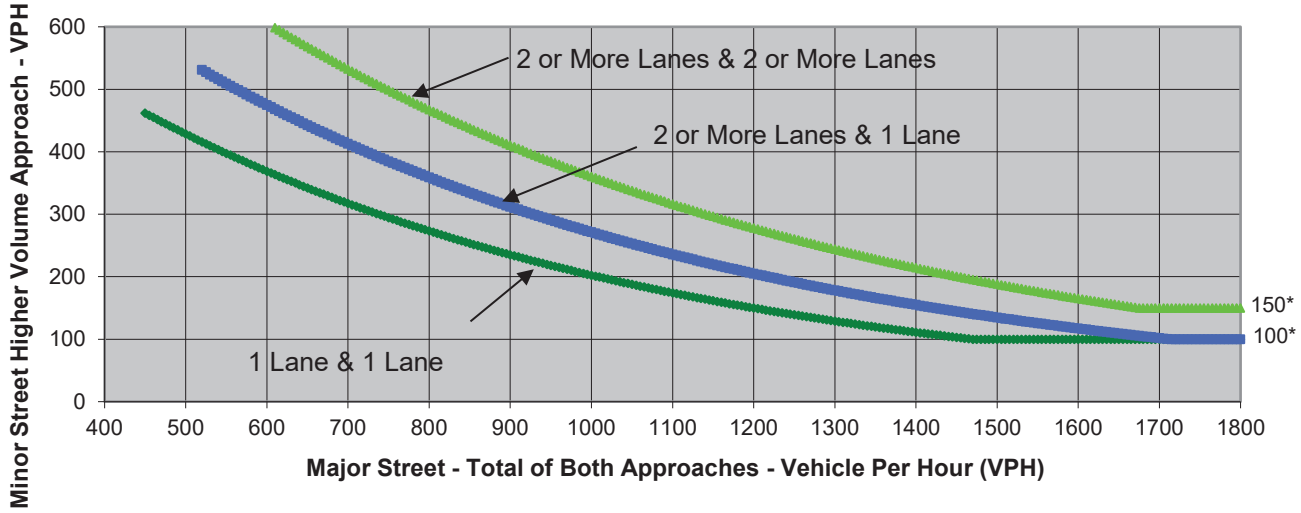
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	174	0	0	0
Through	449	362	0	0
Right	92	86	614	14
Total	715	448	614	14

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,163**	**614**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Plaza Dr
Scenario	EXNP
Minor Street	Costco Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	6	77	2	91
Through	54	48	0	2
Right	151	6	6	76
Total	211	131	8	169

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	12
Approach with Worst Case Delay	WB
Total Vehicles on Approach	169

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**0.6**	**169**	**519**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

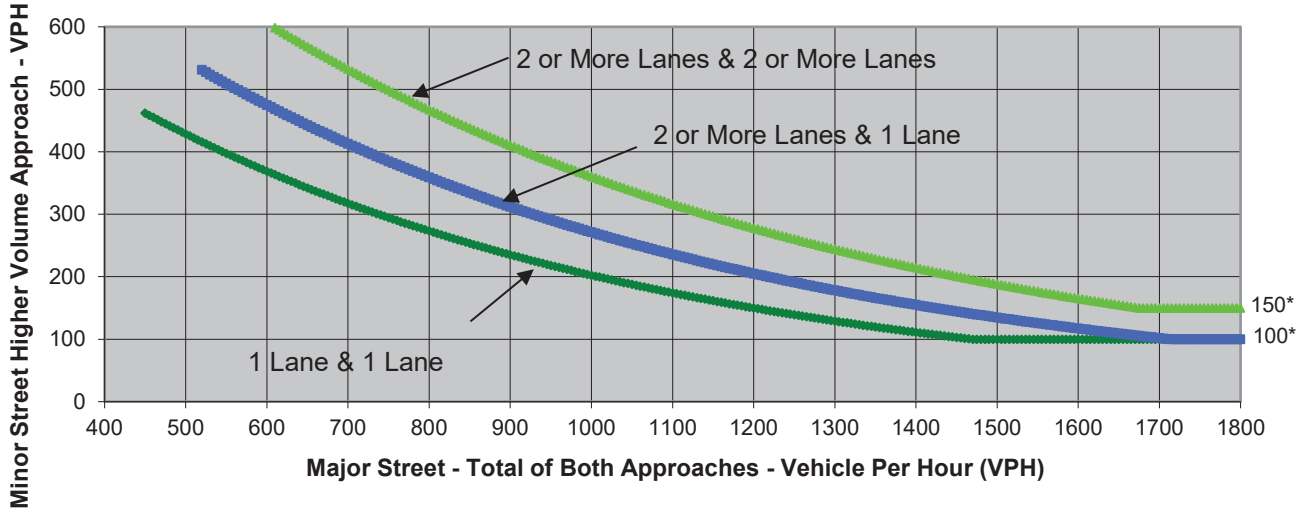
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	6	77	2	91
Through	54	48	0	2
Right	151	6	6	76
Total	211	131	8	169

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**342**	**169**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	455	519	0	0
Right	42	0	0	8
Total	497	519	0	8

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	8

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**0**	**8**	**1,024**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

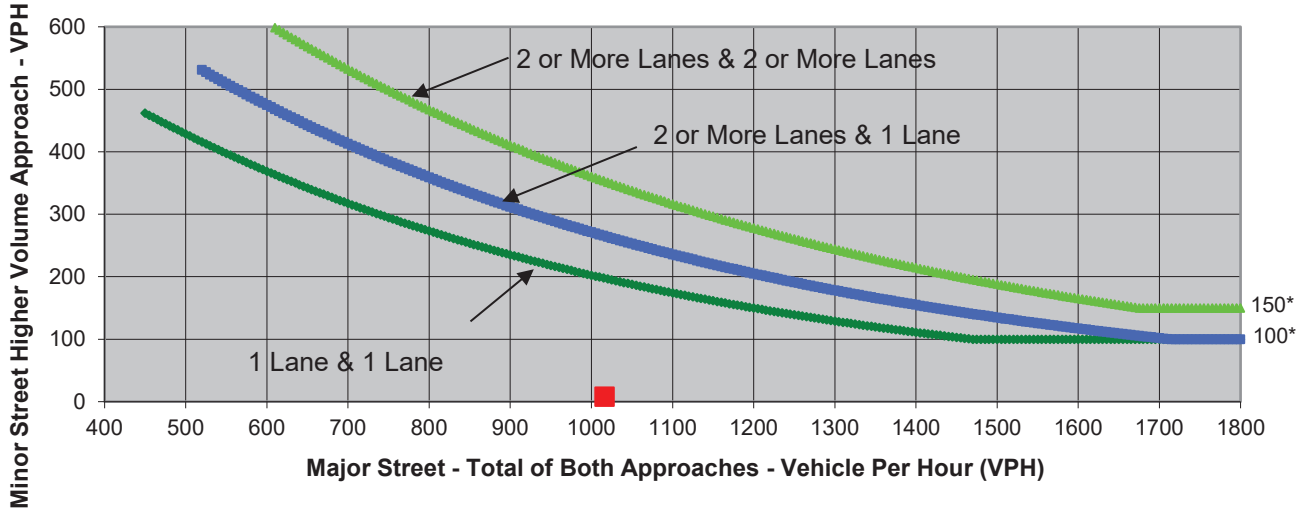
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	455	519	0	0
Right	42	0	0	8
Total	497	519	0	8

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,016**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	EXNP
Minor Street	Rotary Way
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	161
Through	671	769	0	0
Right	62	0	0	63
Total	733	859	0	224

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	44.9
Approach with Worst Case Delay	NB
Total Vehicles on Approach	733

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**9.1**	**224**	**1,816**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Rotary Way

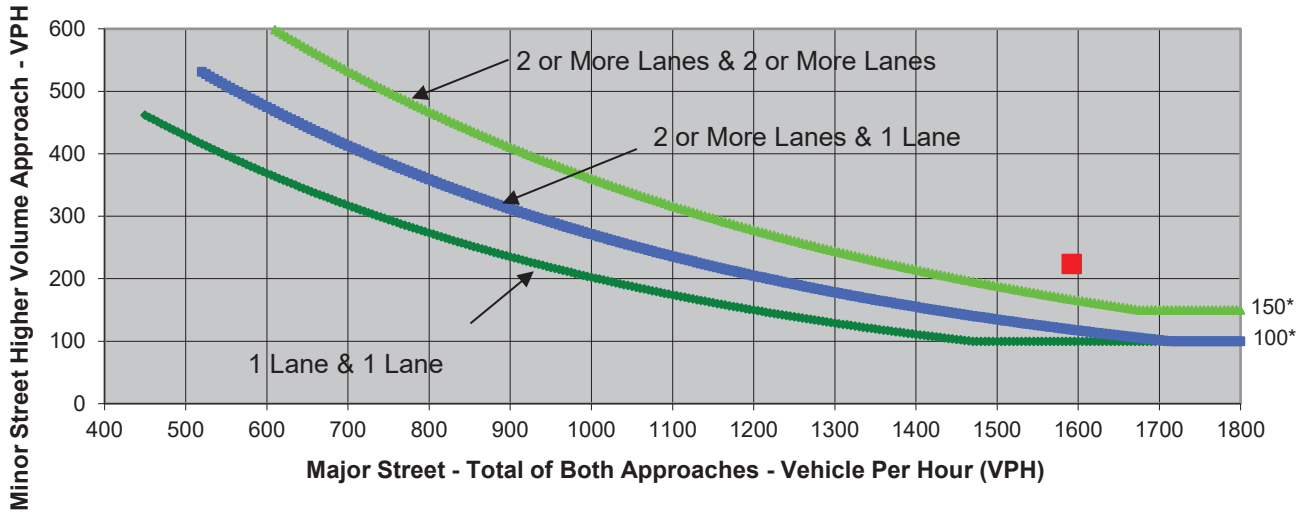
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	161
Through	671	769	0	0
Right	62	0	0	63
Total	733	859	0	224

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,592**	**224**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXNP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	197	0	0	0
Through	747	891	0	0
Right	123	92	420	17
Total	1,067	983	420	17

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	11.7
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,067

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**3.5**	**420**	**2,487**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

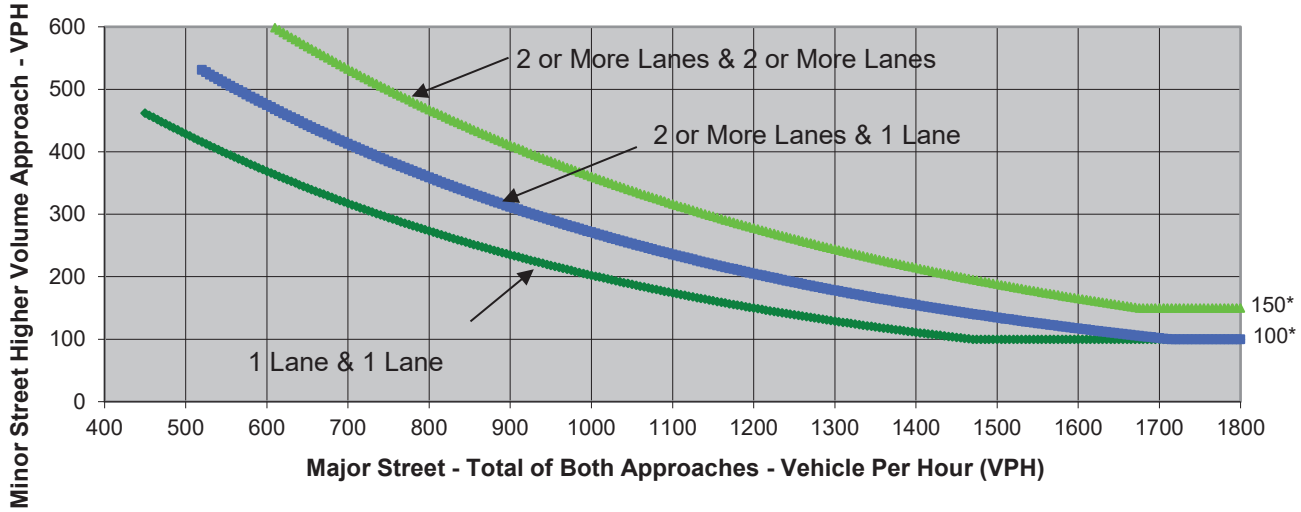
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	197	0	0	0
Through	747	891	0	0
Right	123	92	420	17
Total	1,067	983	420	17

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,050**	**420**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Plaza Dr
Scenario	EXNP
Minor Street	Costco Driveway
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	37	118	22	192
Through	118	265	23	14
Right	298	46	52	123
Total	453	429	97	329

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	97.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	329

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**8.9**	**329**	**1,308**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

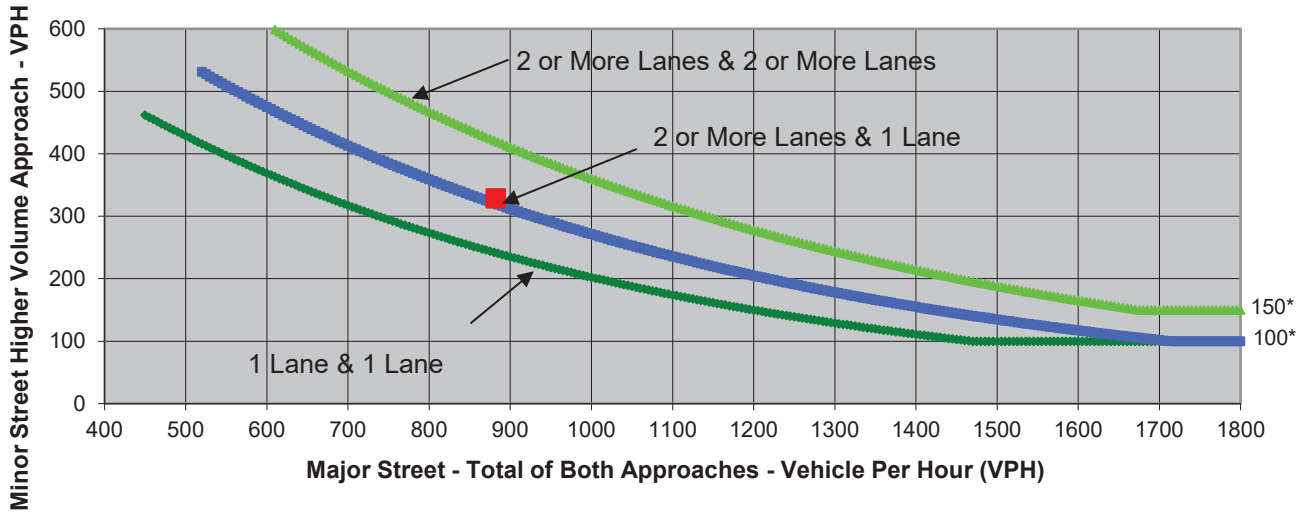
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	37	118	22	192
Through	118	265	23	14
Right	298	46	52	123
Total	453	429	97	329

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**882**	**329**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	555	570	0	0
Right	27	0	0	15
Total	582	570	0	15

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.3
Approach with Worst Case Delay	WB
Total Vehicles on Approach	15

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**0**	**15**	**1,167**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

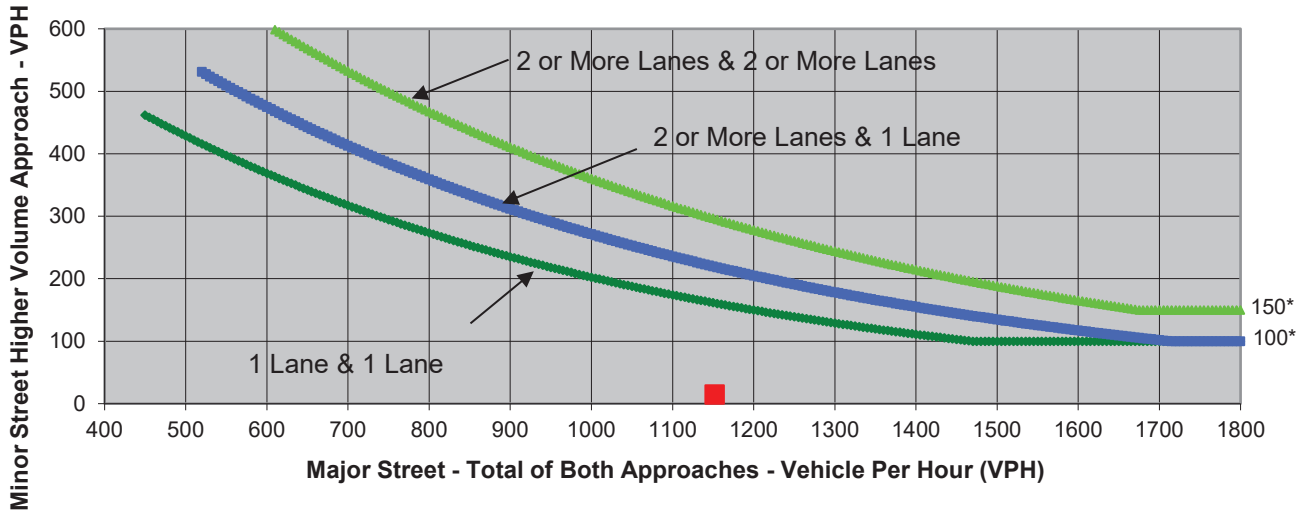
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	555	570	0	0
Right	27	0	0	15
Total	582	570	0	15

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,152**	**15**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	EXNP
Minor Street	Rotary Way
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	85	0	205
Through	729	774	0	0
Right	74	0	0	80
Total	803	859	0	285

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	75.5
Approach with Worst Case Delay	NB
Total Vehicles on Approach	803

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**16.8**	**285**	**1,947**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Rotary Way

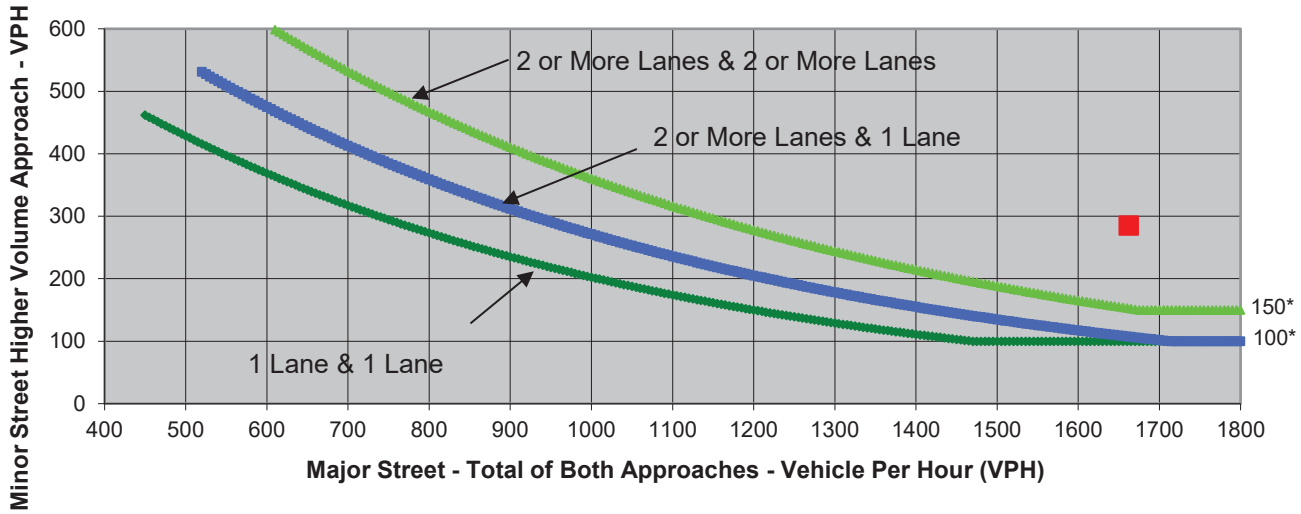
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	85	0	205
Through	729	774	0	0
Right	74	0	0	80
Total	803	859	0	285

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,662**	**285**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	EXNP
Minor Street	I-80 EB Ramps/Driveway
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	211	0	0	0
Through	790	921	0	0
Right	137	111	450	31
Total	1,138	1,032	450	31

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.9
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,138

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**3.4**	**450**	**2,651**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

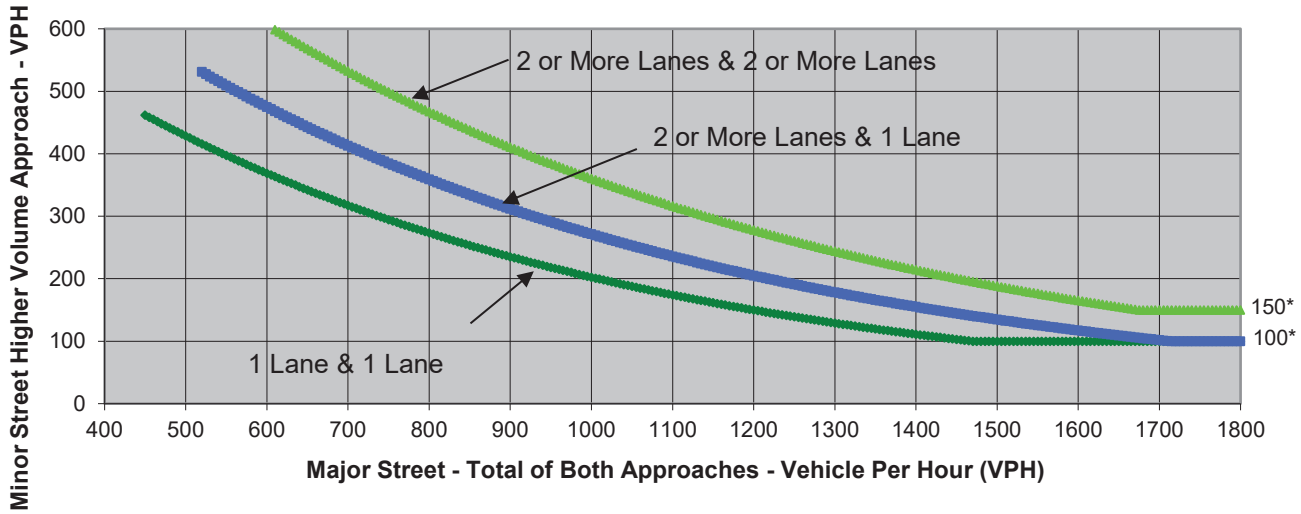
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	211	0	0	0
Through	790	921	0	0
Right	137	111	450	31
Total	1,138	1,032	450	31

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,170**	**450**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Plaza Dr
Scenario	EXNP
Minor Street	Costco Driveway
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	33	85	21	191
Through	163	300	15	18
Right	276	32	65	106
Total	472	417	101	315

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	79.5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	315

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**7**	**315**	**1,305**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

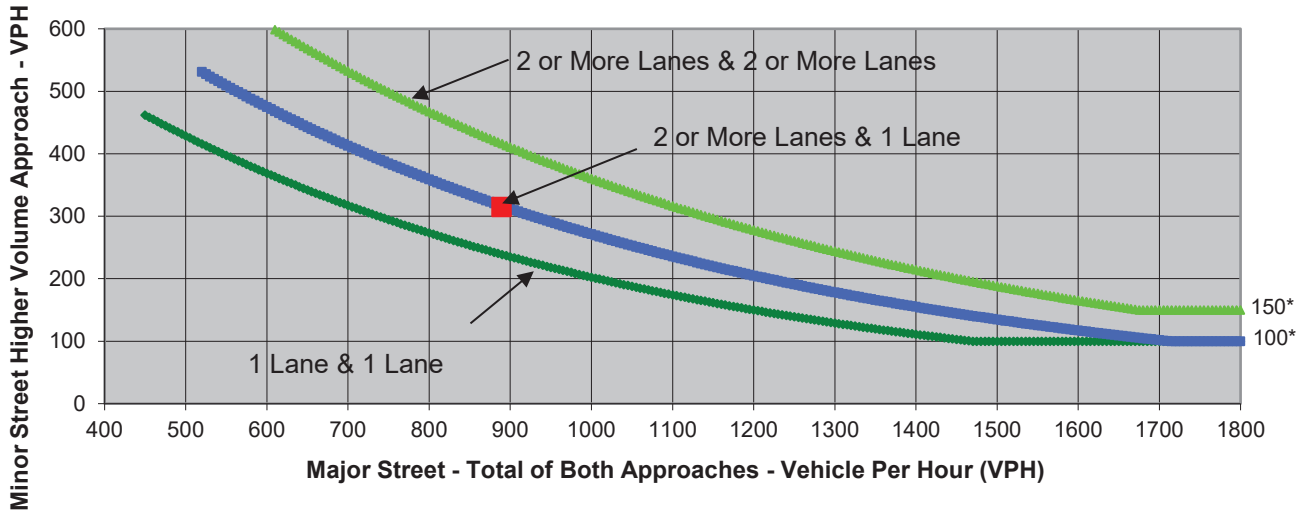
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	33	85	21	191
Through	163	300	15	18
Right	276	32	65	106
Total	472	417	101	315

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**889**	**315**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	601	653	0	0
Right	44	0	0	14
Total	645	653	0	14

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	14

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**0**	**14**	**1,312**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

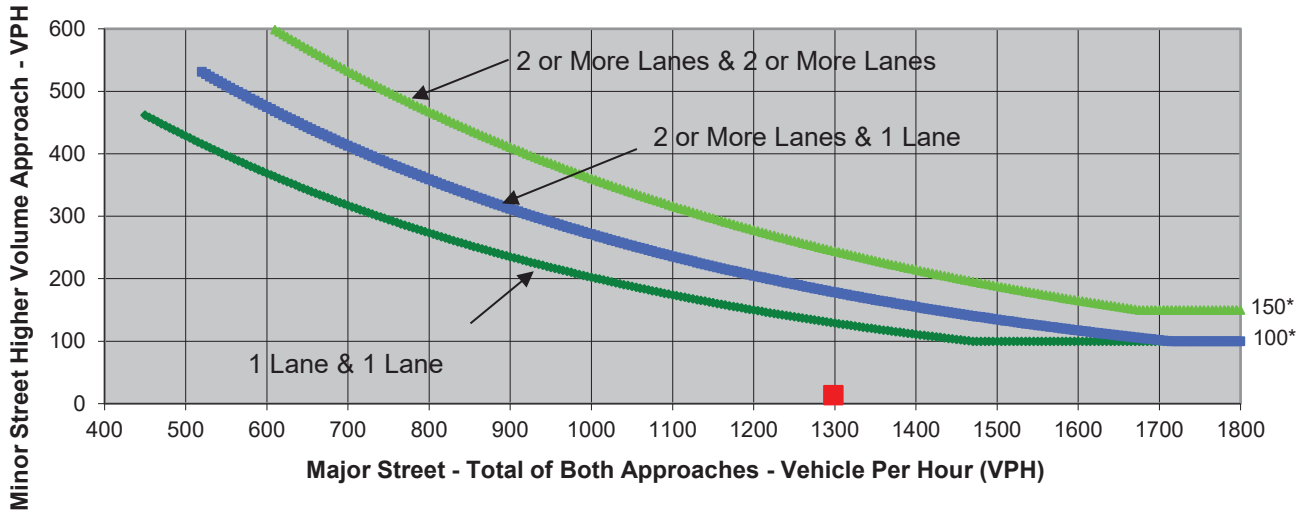
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXNP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	601	653	0	0
Right	44	0	0	14
Total	645	653	0	14

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,298**	**14**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXNP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	113	0	152
Through	868	932	0	0
Right	39	0	0	77
Total	907	1,045	0	229

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	126.6
Approach with Worst Case Delay	NB
Total Vehicles on Approach	907

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**31.9**	**229**	**2,181**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Rotary Way

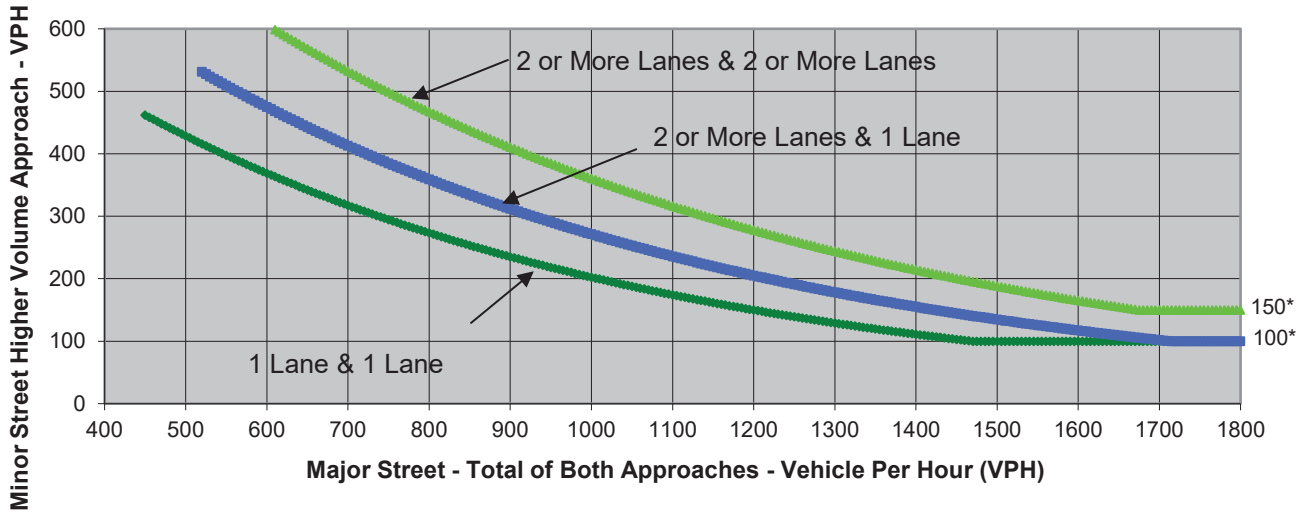
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	113	0	152
Through	868	932	0	0
Right	39	0	0	77
Total	907	1,045	0	229

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,952**	**229**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXNP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	183	0	0	0
Through	925	981	0	0
Right	159	94	443	28
Total	1,267	1,075	443	28

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.2
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,267

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**4.6**	**443**	**2,813**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

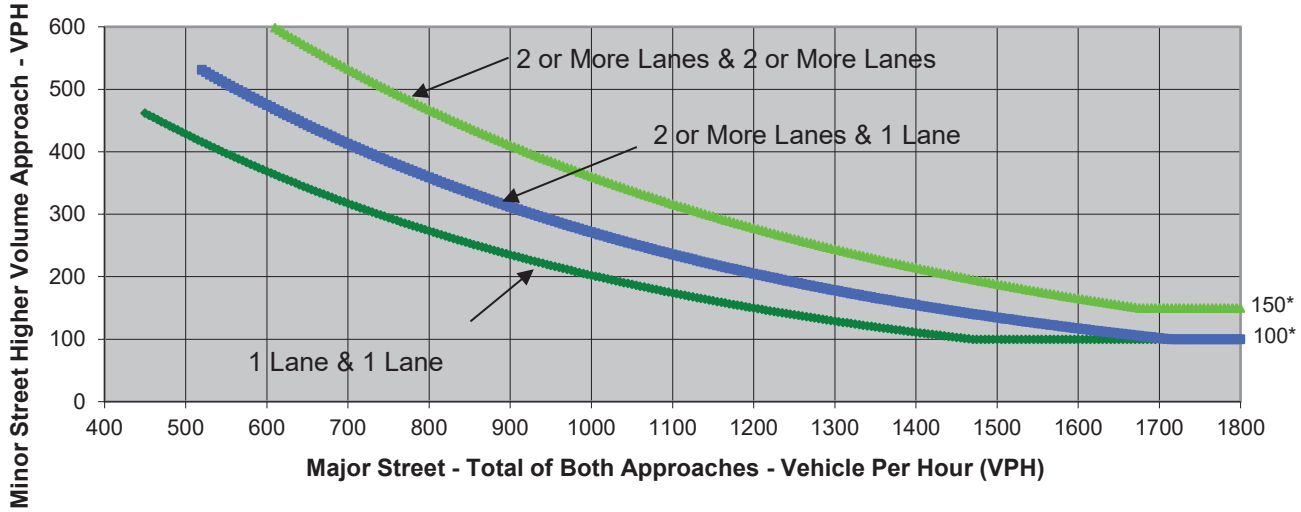
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	183	0	0	0
Through	925	981	0	0
Right	159	94	443	28
Total	1,267	1,075	443	28

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,342**	**443**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXNP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	53	123	28	190
Through	193	337	29	31
Right	320	62	82	136
Total	566	522	139	357

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	385.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	357

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXNP	**38.2**	**357**	**1,584**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

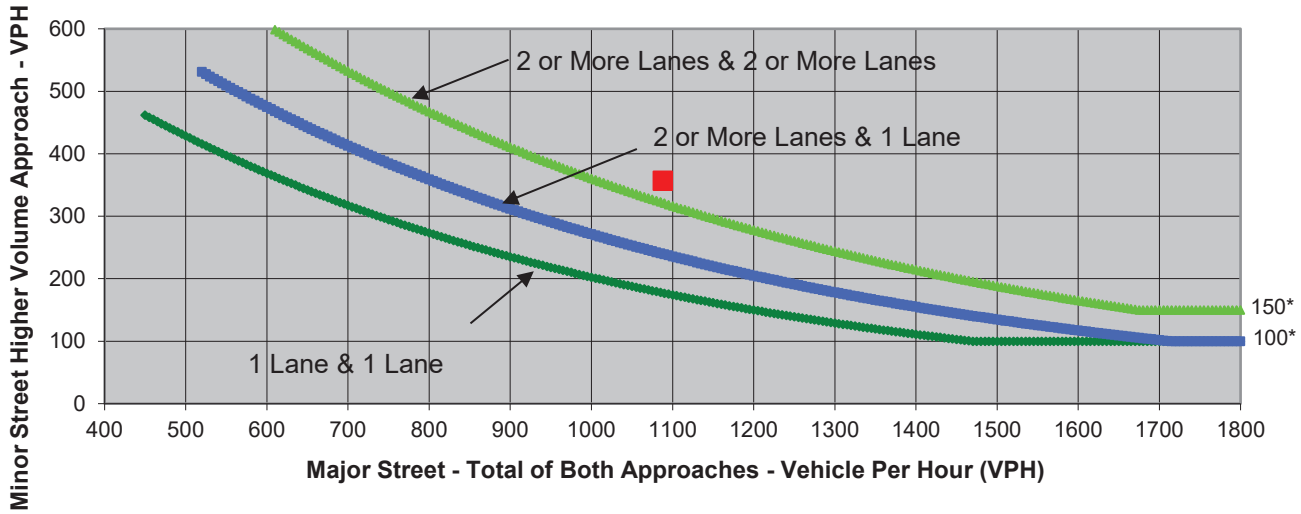
Project	Fairview at Northgate
Scenario	EXNP
Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	53	123	28	190
Through	193	337	29	31
Right	320	62	82	136
Total	566	522	139	357

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,088**	**357**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	304	253	0	0
Right	28	0	0	6
Total	332	253	0	6

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	6

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**6**	**591**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

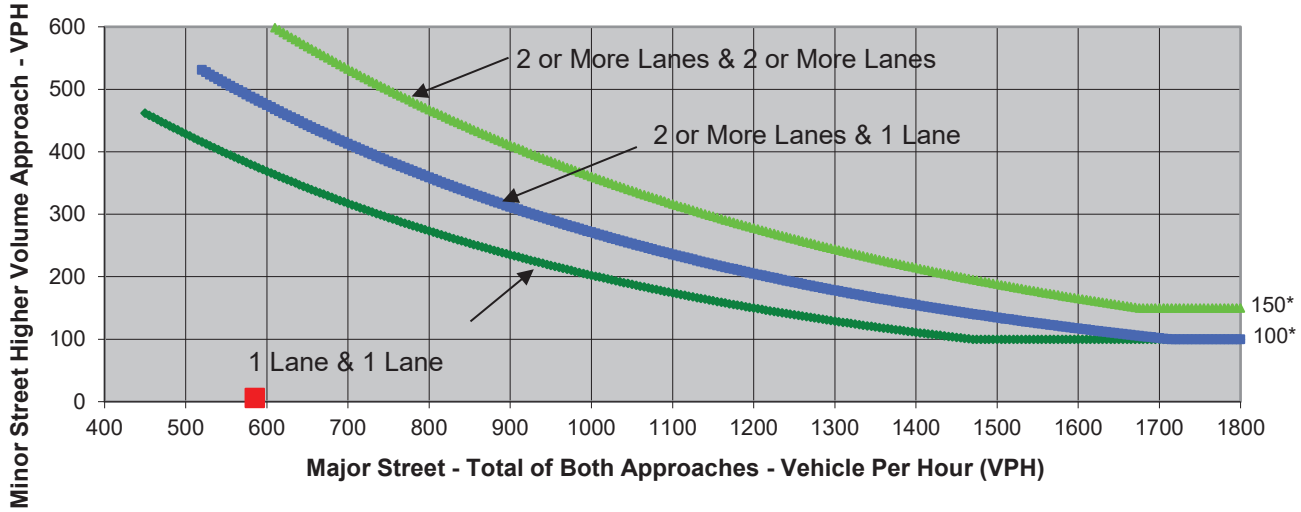
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	304	253	0	0
Right	28	0	0	6
Total	332	253	0	6

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**585**	**6**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	EXPP
Minor Street	Rotary Way
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	45	0	133
Through	444	355	0	0
Right	67	0	0	37
Total	511	400	0	170

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	11
Approach with Worst Case Delay	SB
Total Vehicles on Approach	400

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**1.2**	**170**	**1,081**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

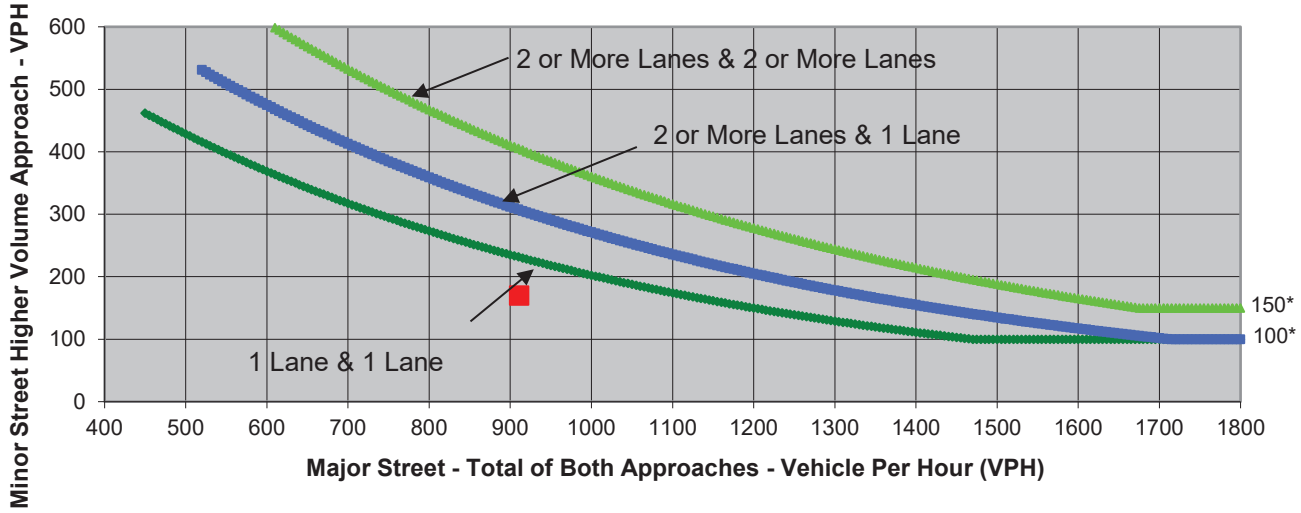
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	45	0	133
Through	444	355	0	0
Right	67	0	0	37
Total	511	400	0	170

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**911**	**170**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	174	0	0	0
Through	558	412	0	0
Right	92	107	614	14
Total	824	519	614	14

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	14

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**614**	**1,971**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

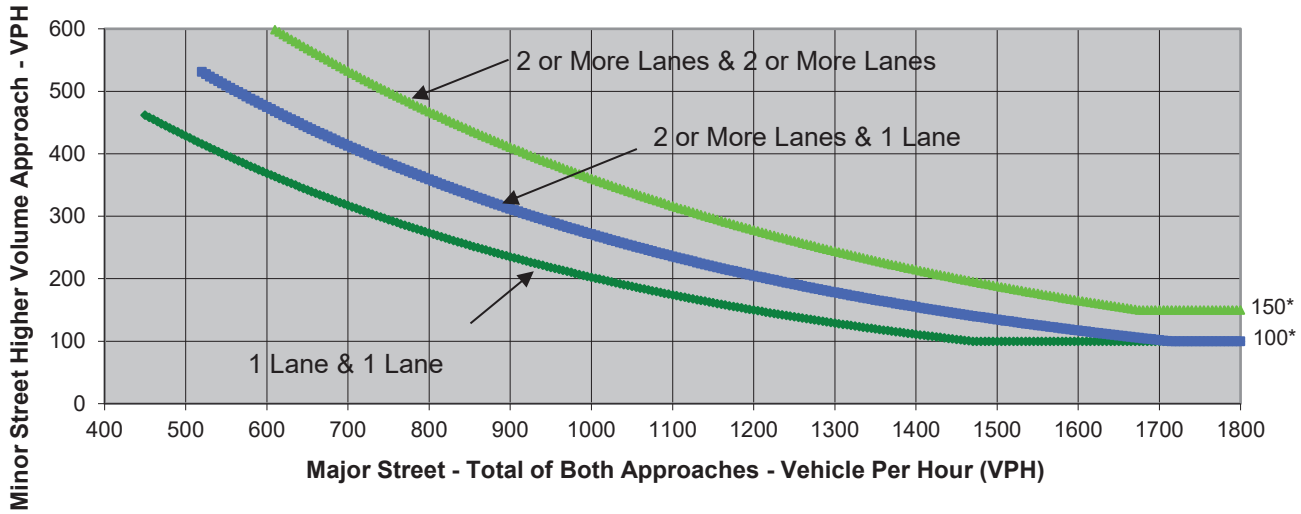
Project	Fairview at Northgate
Scenario	EXPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	174	0	0	0
Through	558	412	0	0
Right	92	107	614	14
Total	824	519	614	14

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,343**	**614**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	6	63	2	66
Through	53	23	0	2
Right	125	6	6	62
Total	184	92	8	130

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	130

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0.4**	**130**	**414**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

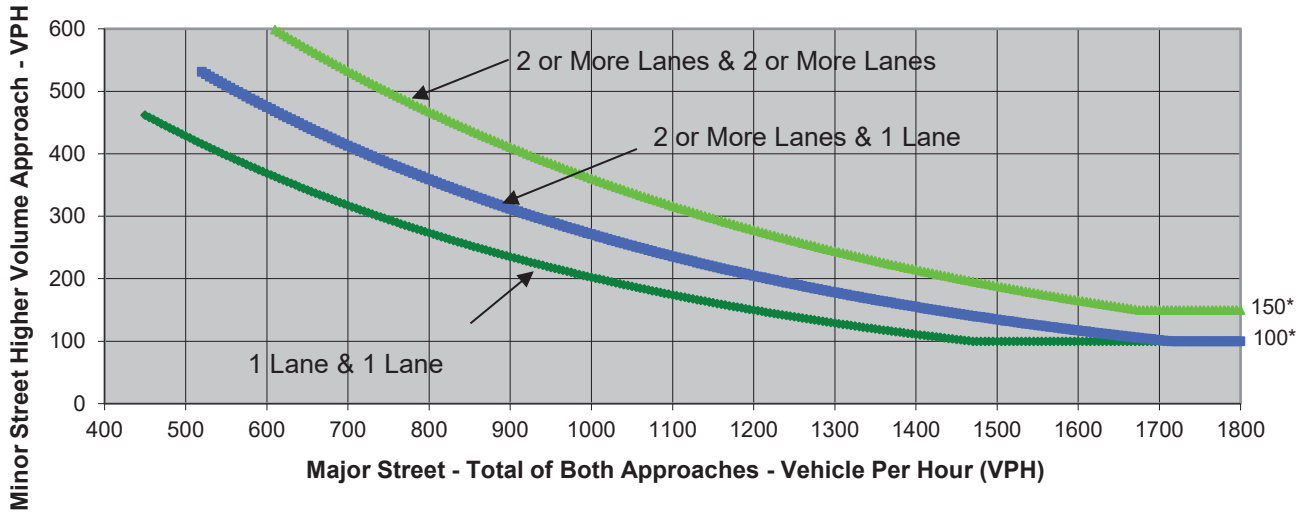
Project	Fairview at Northgate
Scenario	EXPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	6	63	2	66
Through	53	23	0	2
Right	125	6	6	62
Total	184	92	8	130

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**276**	**130**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	294	420
Right	33	0	39	0
Total	33	0	333	420

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.9
Approach with Worst Case Delay	NB
Total Vehicles on Approach	33

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**33**	**786**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

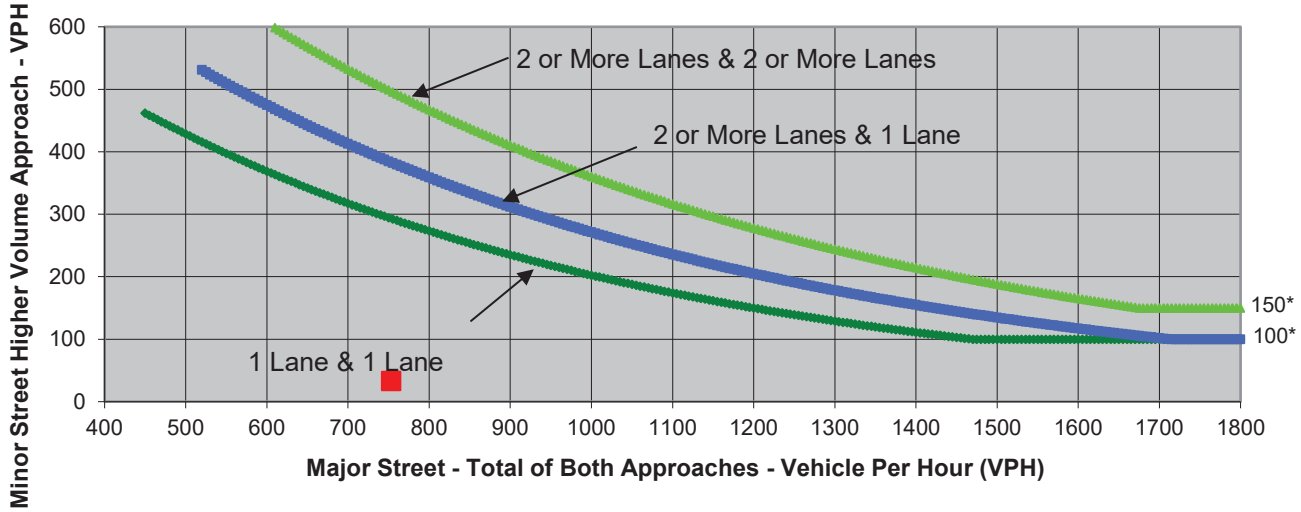
Project	Fairview at Northgate
Scenario	EXPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	294	420
Right	33	0	39	0
Total	33	0	333	420

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**753**	**33**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway I

Project	Fairview at Northgate
Scenario	EXPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	121	0	268
Through	1,063	1,165	0	0
Right	249	0	0	101
Total	1,312	1,286	0	369

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	5.4
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,286

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**1.9**	**369**	**2,967**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway I

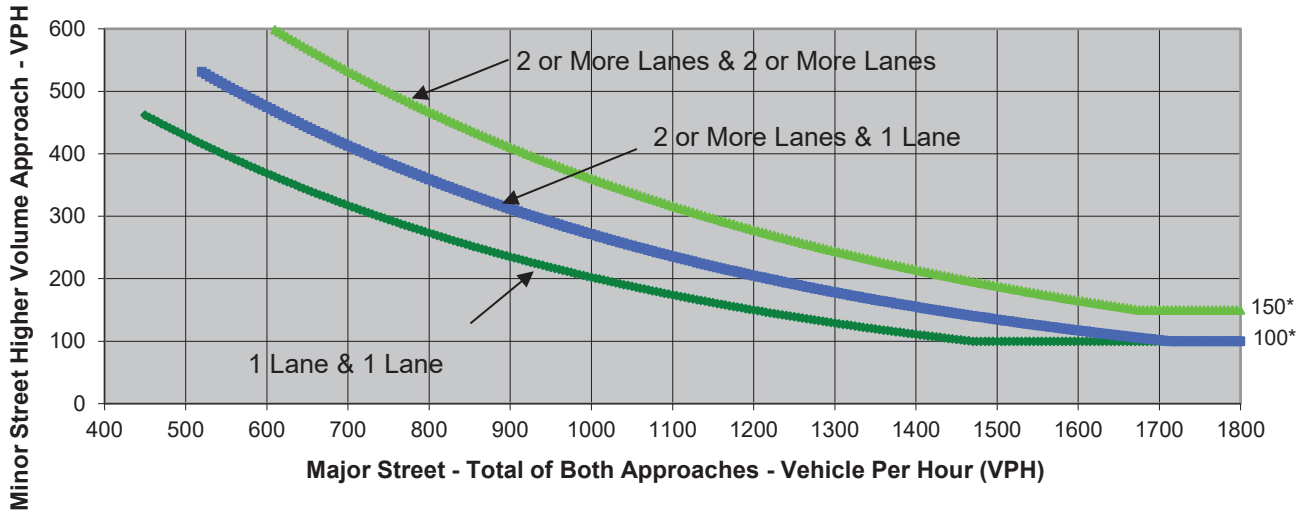
Project	Fairview at Northgate
Scenario	EXPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	121	0	268
Through	1,063	1,165	0	0
Right	249	0	0	101
Total	1,312	1,286	0	369

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,598**	**369**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	201
Through	866	974	0	0
Right	187	0	0	76
Total	1,053	1,064	0	277

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	277

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0.2**	**277**	**2,394**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway III

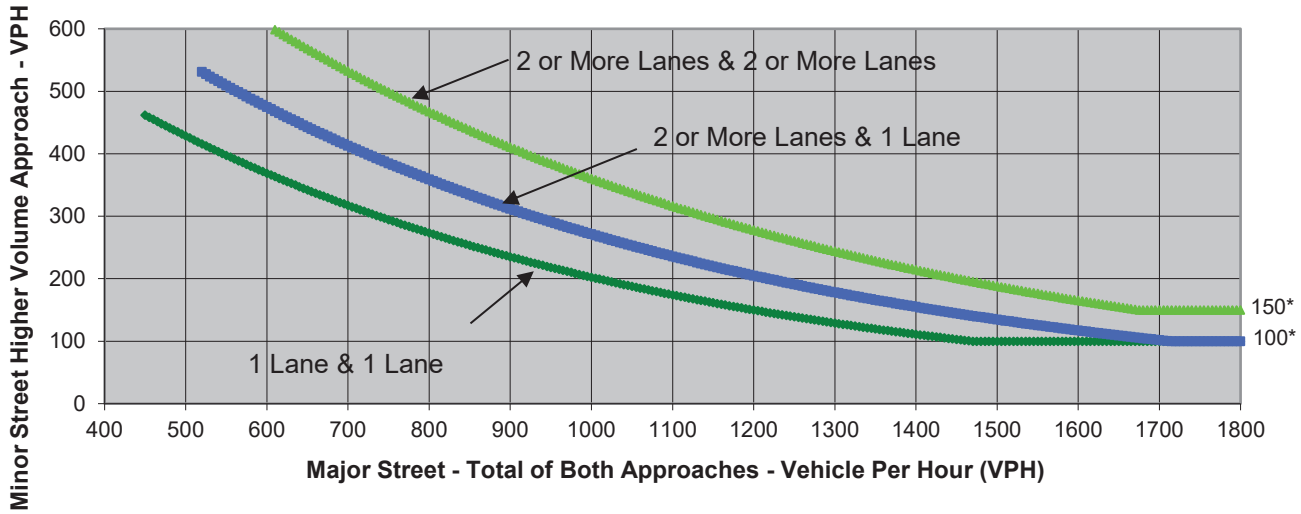
Project	Fairview at Northgate
Scenario	EXPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	201
Through	866	974	0	0
Right	187	0	0	76
Total	1,053	1,064	0	277

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,117**	**277**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	794	623	0	0
Right	41	0	0	8
Total	835	623	0	8

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	8

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**8**	**1,466**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

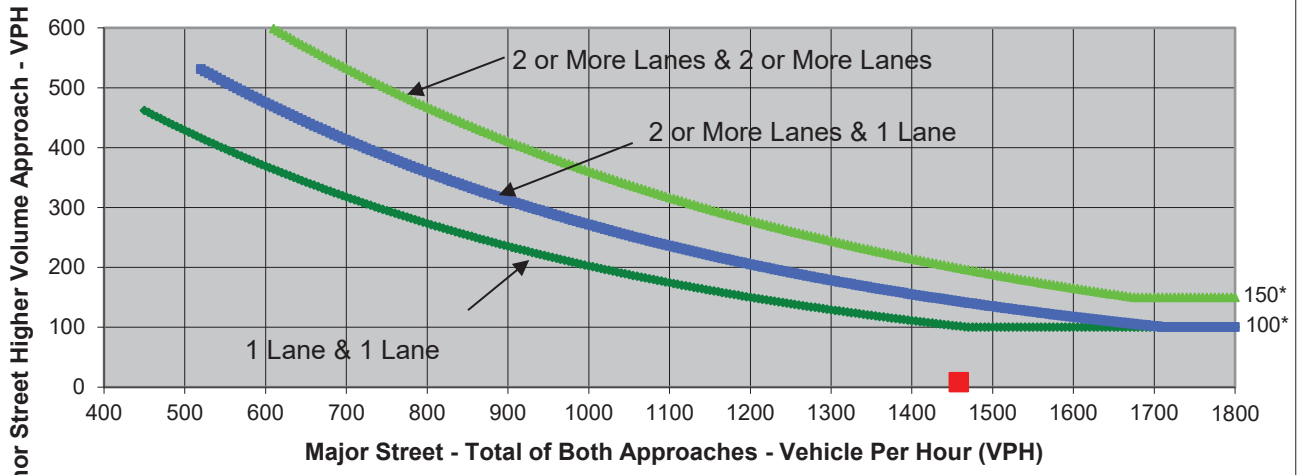
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	794	623	0	0
Right	41	0	0	8
Total	835	623	0	8

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,458**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	161
Through	1,320	1,051	0	0
Right	62	0	0	63
Total	1,382	1,141	0	224

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	238.9
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,141

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**75.7**	**224**	**2,747**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

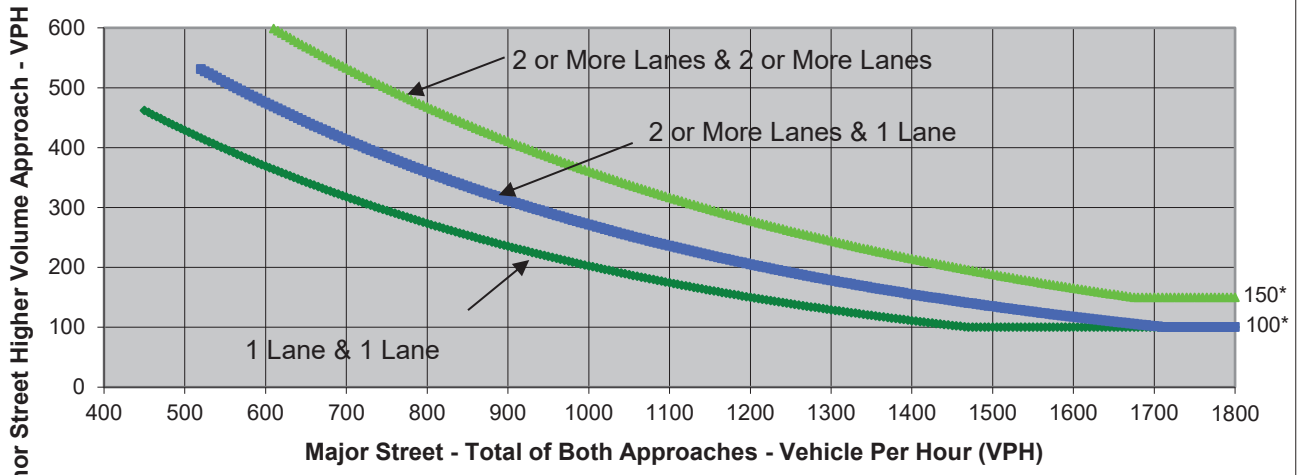
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	161
Through	1,320	1,051	0	0
Right	62	0	0	63
Total	1,382	1,141	0	224

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,523**	**224**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	197	0	0	0
Through	1,396	1,051	0	0
Right	123	214	419	17
Total	1,716	1,265	419	17

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	12.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	17

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0.1**	**419**	**3,417**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

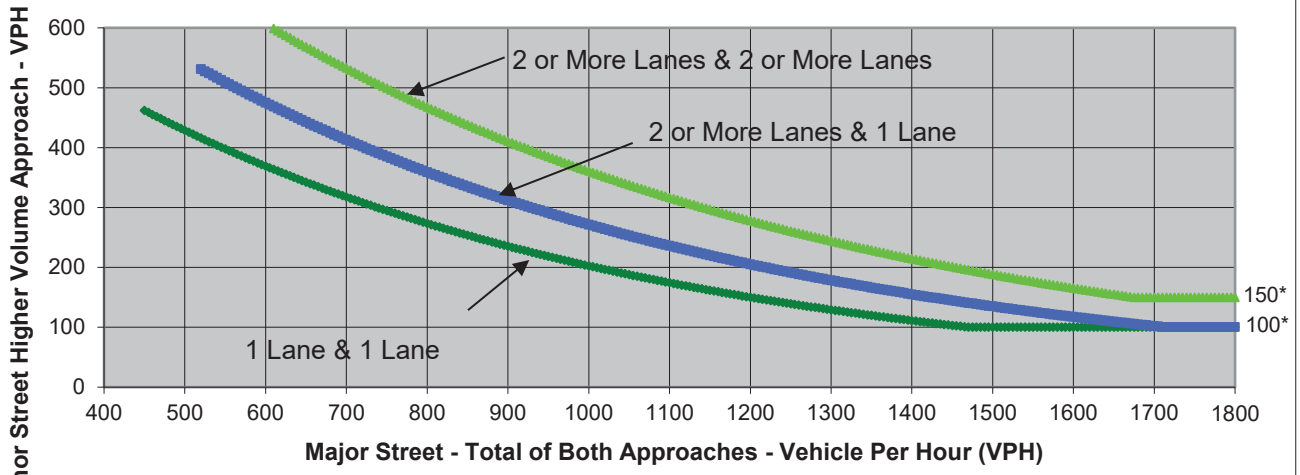
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	197	0	0	0
Through	1,396	1,051	0	0
Right	123	214	419	17
Total	1,716	1,265	419	17

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,981**	**419**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	37	5	22	20
Through	99	134	1	14
Right	17	46	51	12
Total	153	185	74	46

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	11
Approach with Worst Case Delay	WB
Total Vehicles on Approach	46

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0.1**	**74**	**458**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

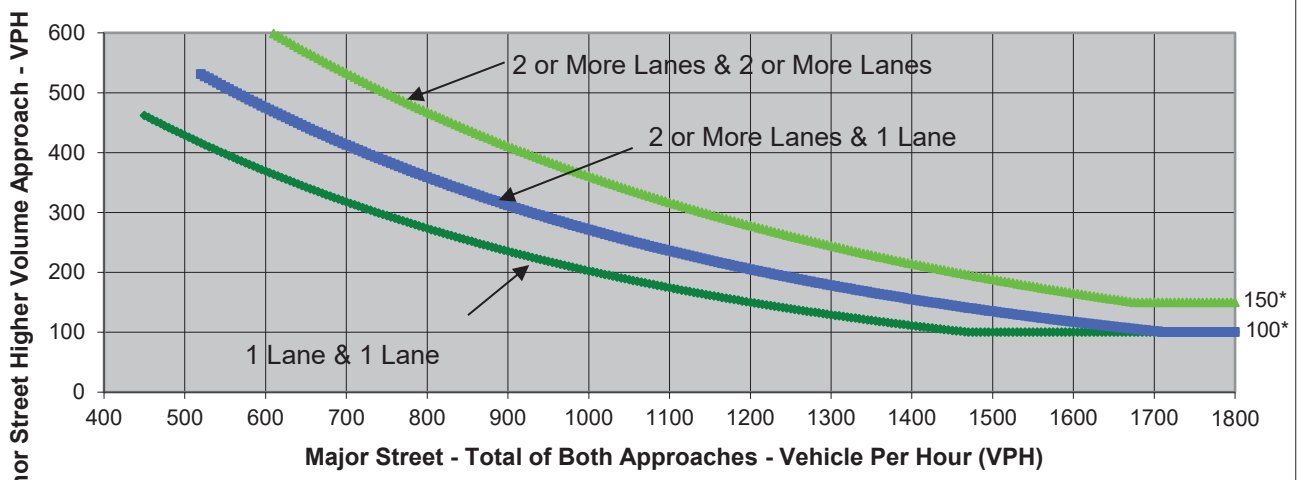
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	37	5	22	20
Through	99	134	1	14
Right	17	46	51	12
Total	153	185	74	46

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**338**	**74**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	330	348
Right	9	0	33	0
Total	9	0	363	348

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	9

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**9**	**720**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

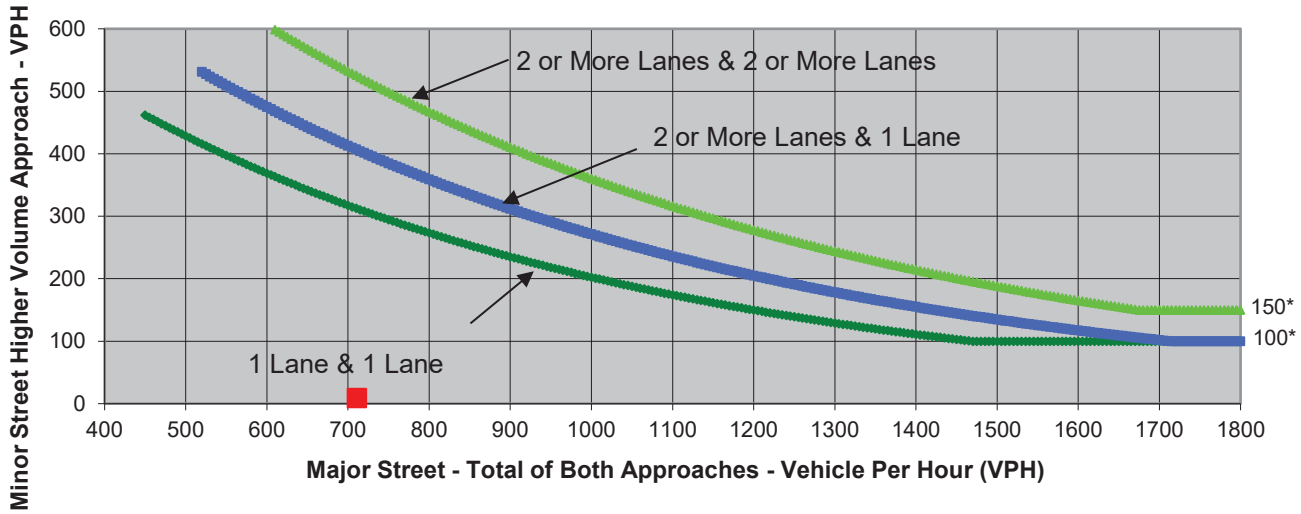
Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	330	348
Right	9	0	33	0
Total	9	0	363	348

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**711**	**9**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	0
Through	1,230	1,141	0	0
Right	153	0	0	125
Total	1,383	1,155	0	125

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	115.8
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,155

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**37.2**	**125**	**2,663**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

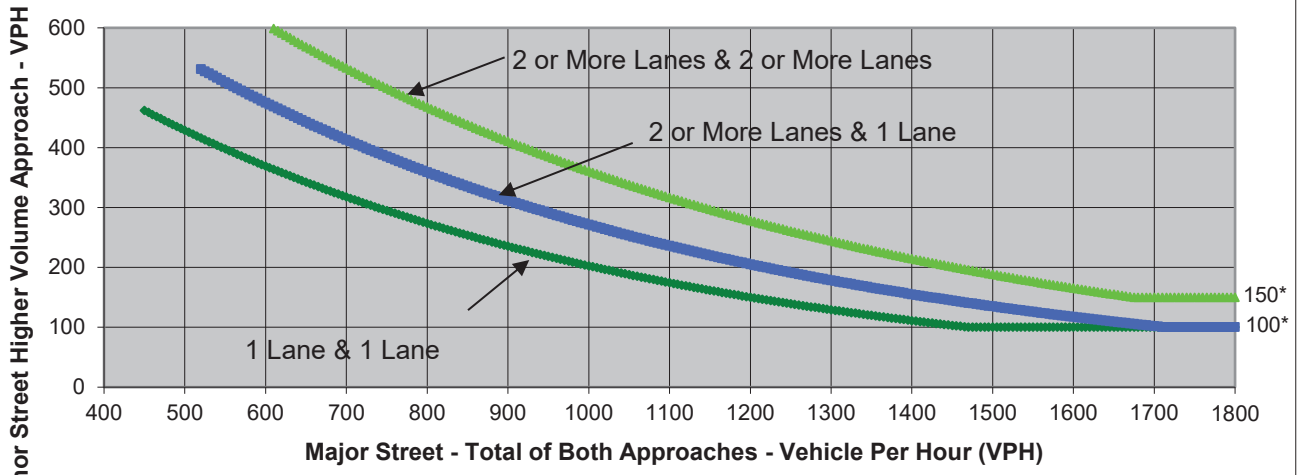
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	0
Through	1,230	1,141	0	0
Right	153	0	0	125
Total	1,383	1,155	0	125

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,538**	**125**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	57	0	77
Through	1,016	842	0	0
Right	226	0	0	125
Total	1,242	899	0	202

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	50.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	202

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**2.9**	**202**	**2,343**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

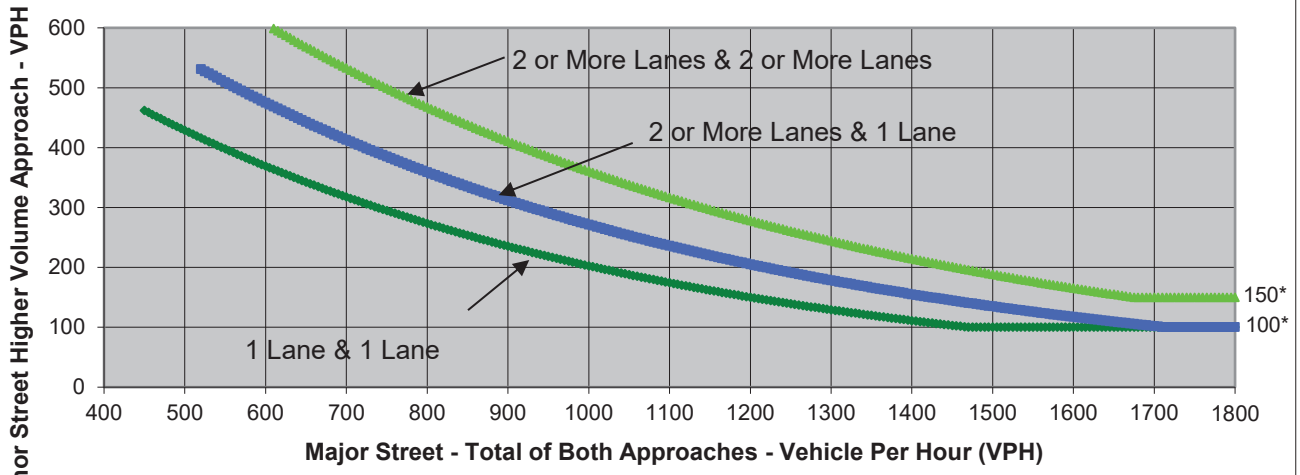
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	57	0	77
Through	1,016	842	0	0
Right	226	0	0	125
Total	1,242	899	0	202

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,141**	**202**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	945	690	0	0
Right	27	0	0	15
Total	972	690	0	15

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	5.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	15

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**15**	**1,677**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

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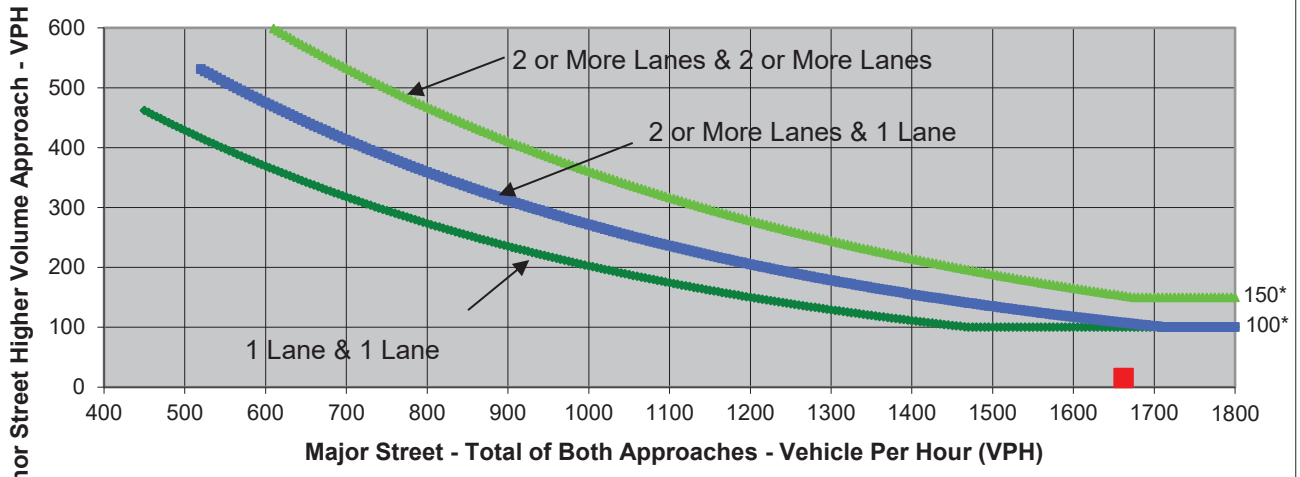
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	945	690	0	0
Right	27	0	0	15
Total	972	690	0	15

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,662**	**15**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	85	0	205
Through	1,367	1,120	0	0
Right	74	0	0	80
Total	1,441	1,205	0	285

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	281.1
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,205

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**94.1**	**285**	**2,931**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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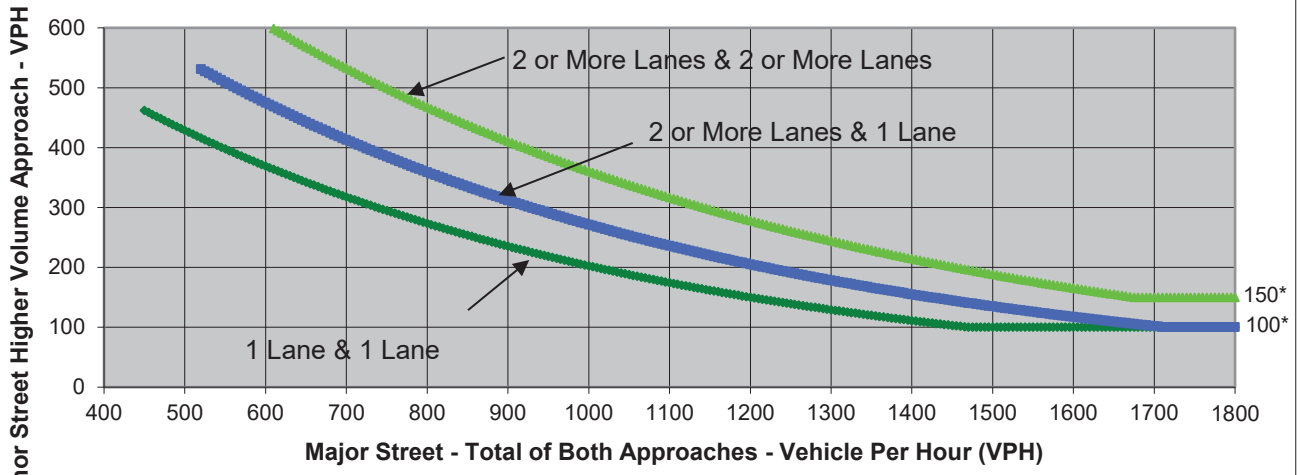
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	85	0	205
Through	1,367	1,120	0	0
Right	74	0	0	80
Total	1,441	1,205	0	285

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,646**	**285**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	211	0	0	0
Through	1,428	1,127	0	0
Right	137	251	450	31
Total	1,776	1,378	450	31

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	354.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	31

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**3**	**450**	**3,635**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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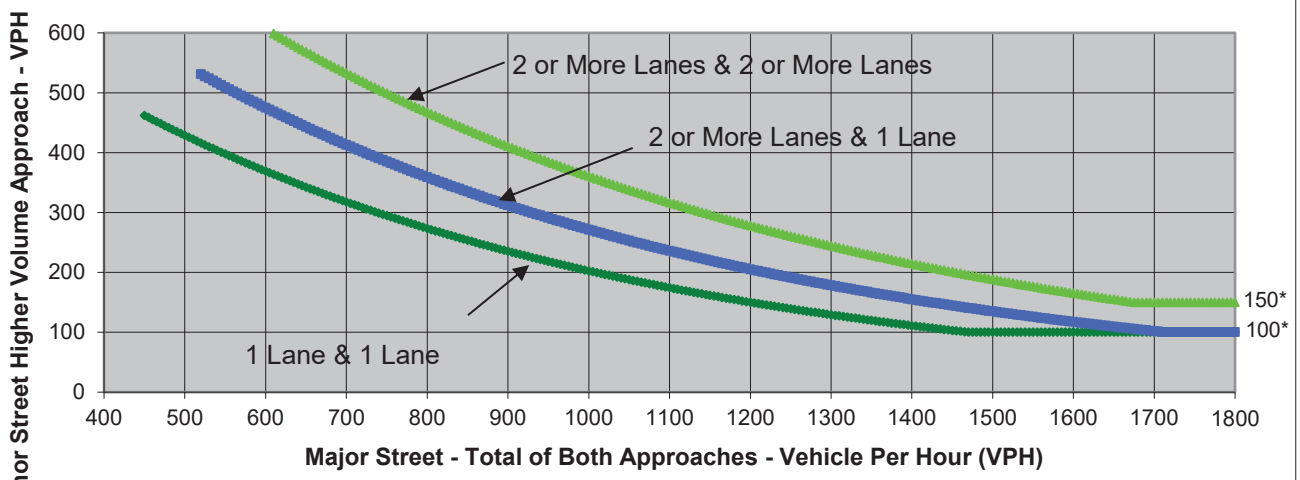
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	211	0	0	0
Through	1,428	1,127	0	0
Right	137	251	450	31
Total	1,776	1,378	450	31

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,154**	**450**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	33	3	21	24
Through	139	173	0	18
Right	3	32	64	4
Total	175	208	85	46

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	12
Approach with Worst Case Delay	WB
Total Vehicles on Approach	46

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0.2**	**85**	**514**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

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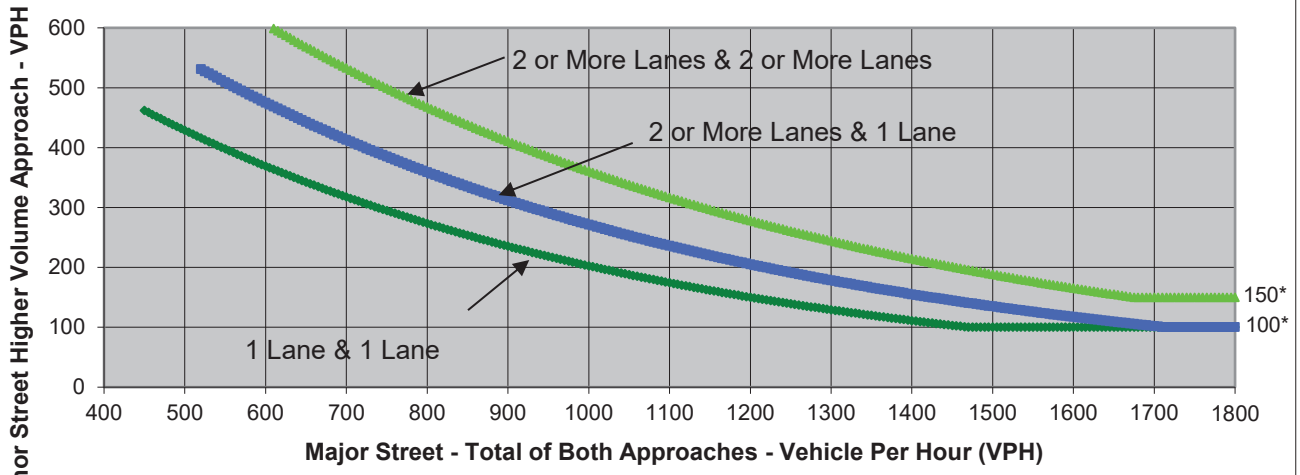
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	33	3	21	24
Through	139	173	0	18
Right	3	32	64	4
Total	175	208	85	46

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**383**	**85**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	266	362
Right	10	0	38	0
Total	10	0	304	362

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**10**	**676**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

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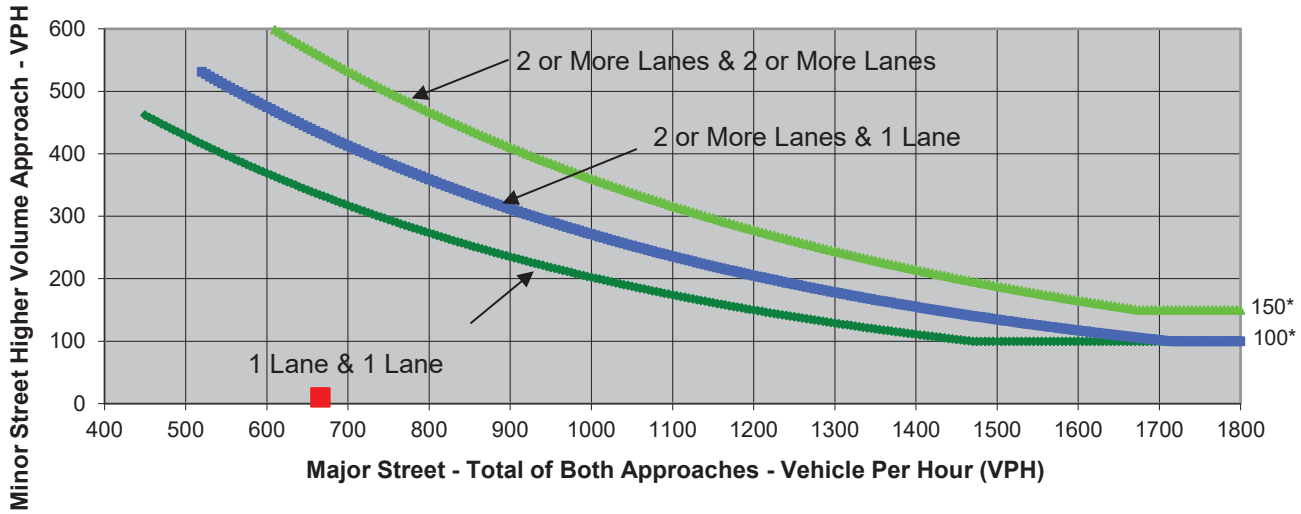
Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	266	362
Right	10	0	38	0
Total	10	0	304	362

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**666**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,271	1,205	0	0
Right	176	0	0	144
Total	1,447	1,222	0	144

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	130.3
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,222

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**44.2**	**144**	**2,813**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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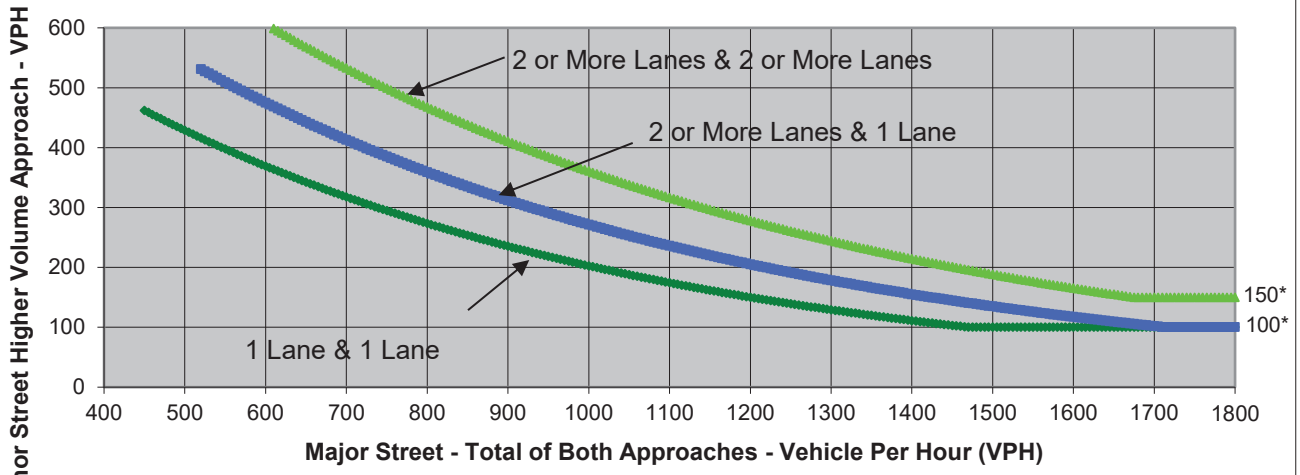
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,271	1,205	0	0
Right	176	0	0	144
Total	1,447	1,222	0	144

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,669**	**144**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,025	862	0	0
Right	260	0	0	144
Total	1,285	928	0	233

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	1008.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	233

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**65.3**	**233**	**2,446**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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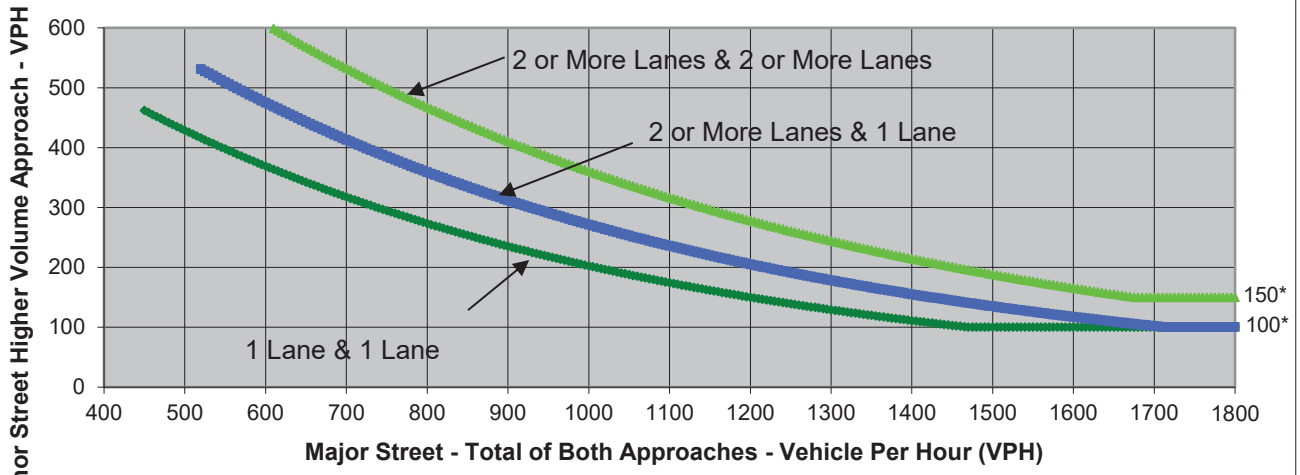
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,025	862	0	0
Right	260	0	0	144
Total	1,285	928	0	233

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,213**	**233**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,024	779	0	0
Right	44	0	0	14
Total	1,068	779	0	14

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	14

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**14**	**1,861**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

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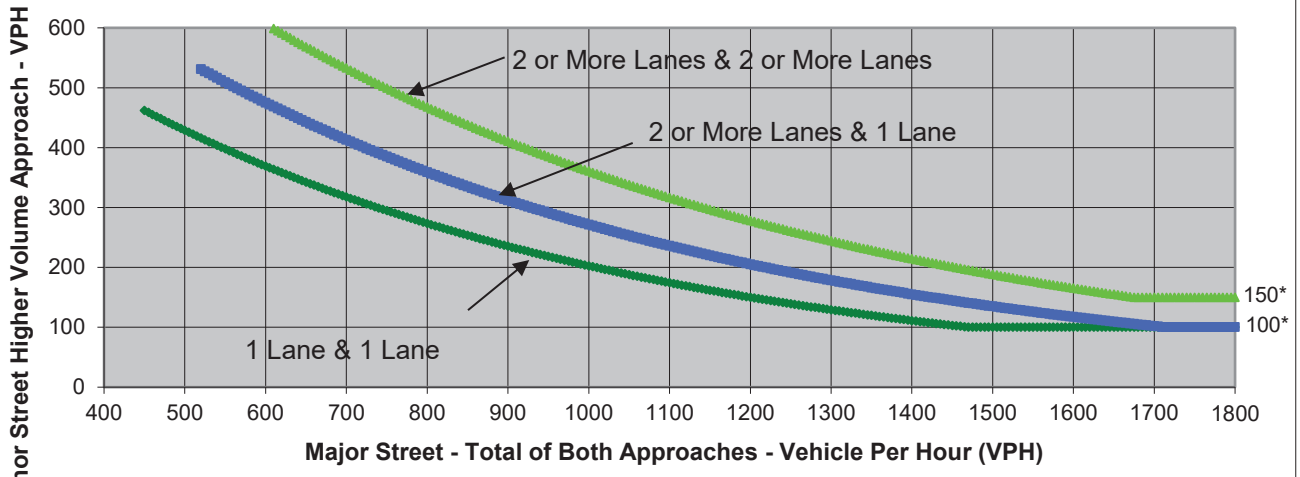
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,024	779	0	0
Right	44	0	0	14
Total	1,068	779	0	14

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,847**	**14**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	114	0	152
Through	1,544	1,295	0	0
Right	39	0	0	77
Total	1,583	1,409	0	229

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	131.8
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,409

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**51.6**	**229**	**3,221**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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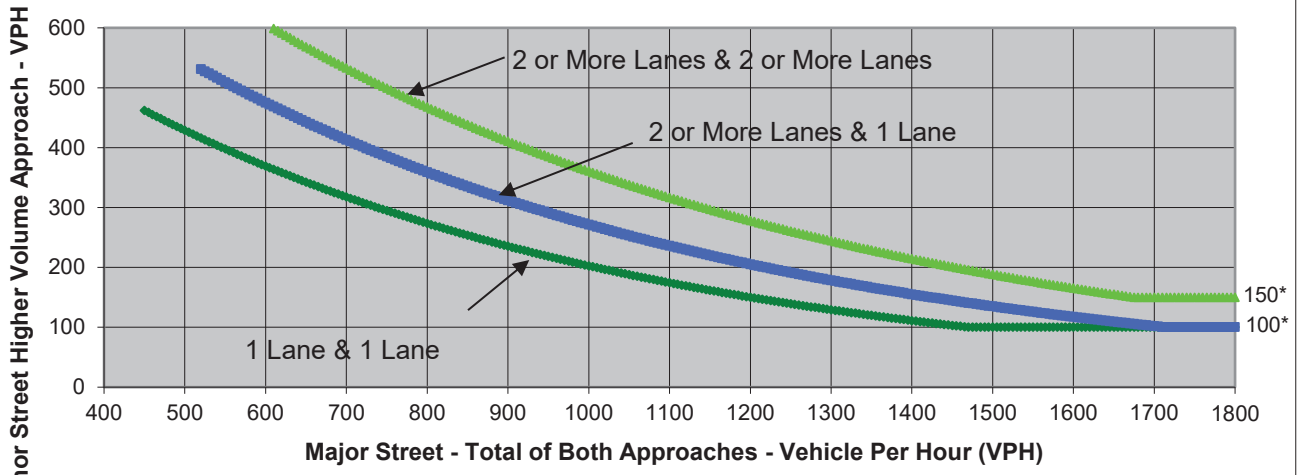
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Rotary Way	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	114	0	152
Through	1,544	1,295	0	0
Right	39	0	0	77
Total	1,583	1,409	0	229

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Rotary Way	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,992**	**229**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	183	0	0	0
Through	1,601	1,191	0	0
Right	159	247	443	28
Total	1,943	1,438	443	28

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	54.4
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,943

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**29.4**	**443**	**3,852**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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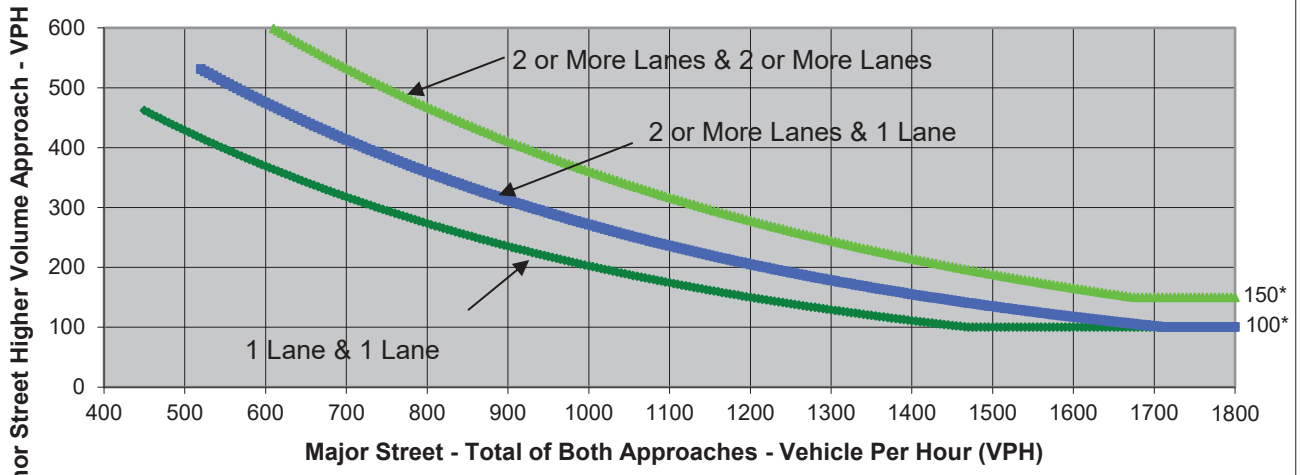
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	183	0	0	0
Through	1,601	1,191	0	0
Right	159	247	443	28
Total	1,943	1,438	443	28

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,381**	**443**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	53	2	28	4
Through	171	182	3	4
Right	42	62	81	4
Total	266	246	112	12

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	12
Approach with Worst Case Delay	WB
Total Vehicles on Approach	12

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**112**	**636**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

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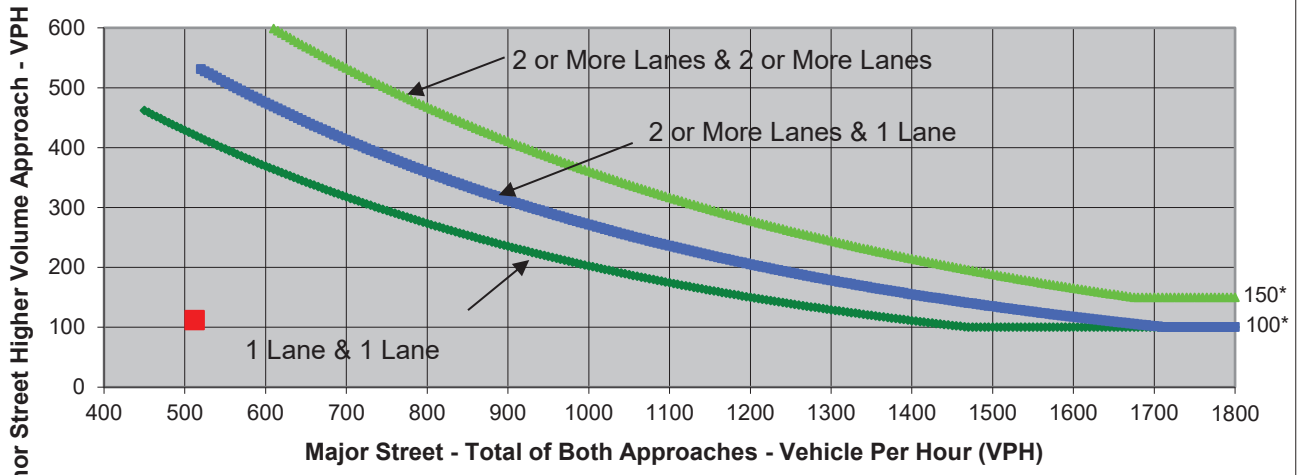
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	53	2	28	4
Through	171	182	3	4
Right	42	62	81	4
Total	266	246	112	12

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**512**	**112**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	351	424
Right	12	0	30	0
Total	12	0	381	424

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.1
Approach with Worst Case Delay	NB
Total Vehicles on Approach	12

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**0**	**12**	**817**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

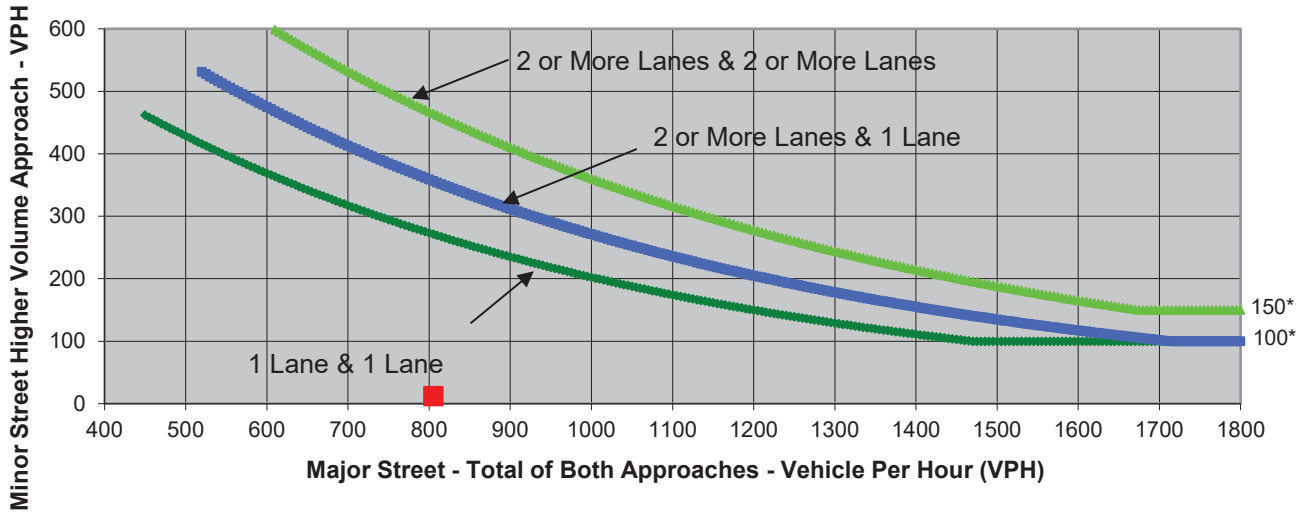
Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	351	424
Right	12	0	30	0
Total	12	0	381	424

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**805**	**12**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,436	1,409	0	0
Right	185	0	0	156
Total	1,621	1,426	0	156

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	48
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,426

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**19**	**156**	**3,203**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

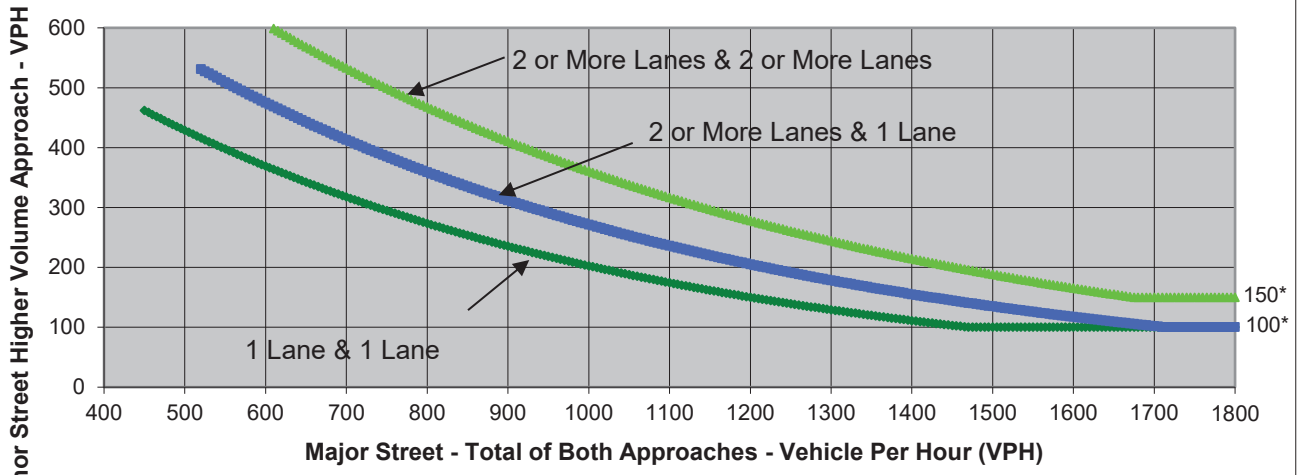
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,436	1,409	0	0
Right	185	0	0	156
Total	1,621	1,426	0	156

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,047**	**156**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	69	0	96
Through	1,189	1,032	0	0
Right	273	0	0	156
Total	1,462	1,101	0	252

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	85.4
Approach with Worst Case Delay	WB
Total Vehicles on Approach	252

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
EXPP	**6**	**252**	**2,815**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

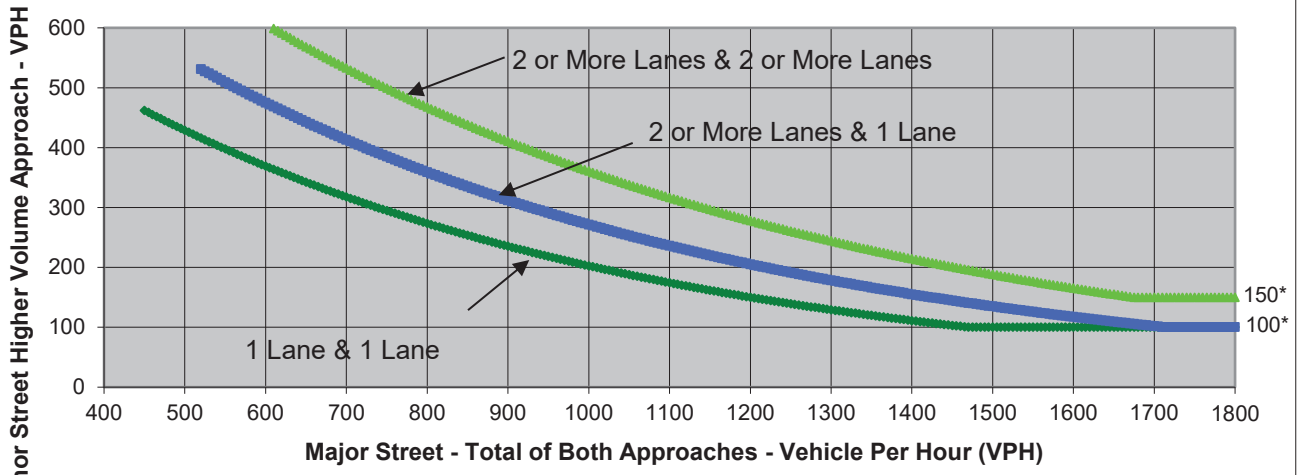
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	EXPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	69	0	96
Through	1,189	1,032	0	0
Right	273	0	0	156
Total	1,462	1,101	0	252

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,563**	**252**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTNP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	260	250	0	0
Right	30	0	0	10
Total	290	250	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTNP	**0**	**10**	**550**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

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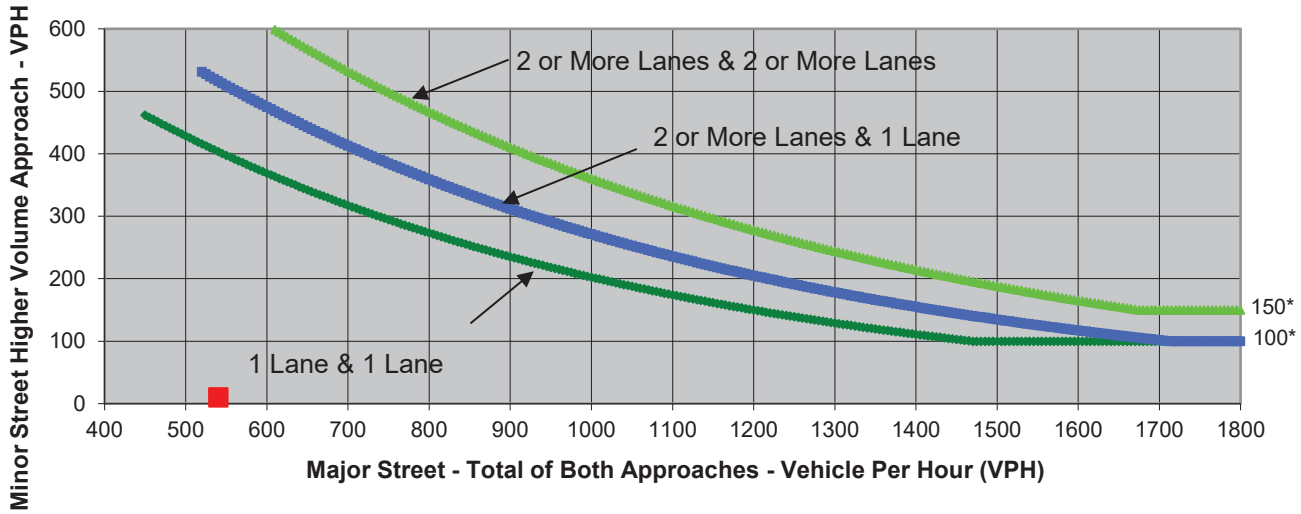
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTNP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	260	250	0	0
Right	30	0	0	10
Total	290	250	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**540**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

Project	Fairview at Northgate
Scenario	NTNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	480	390	0	0
Right	100	100	650	20
Total	770	490	650	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.7
Approach with Worst Case Delay	NB
Total Vehicles on Approach	770

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTNP	**1**	**650**	**1,930**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

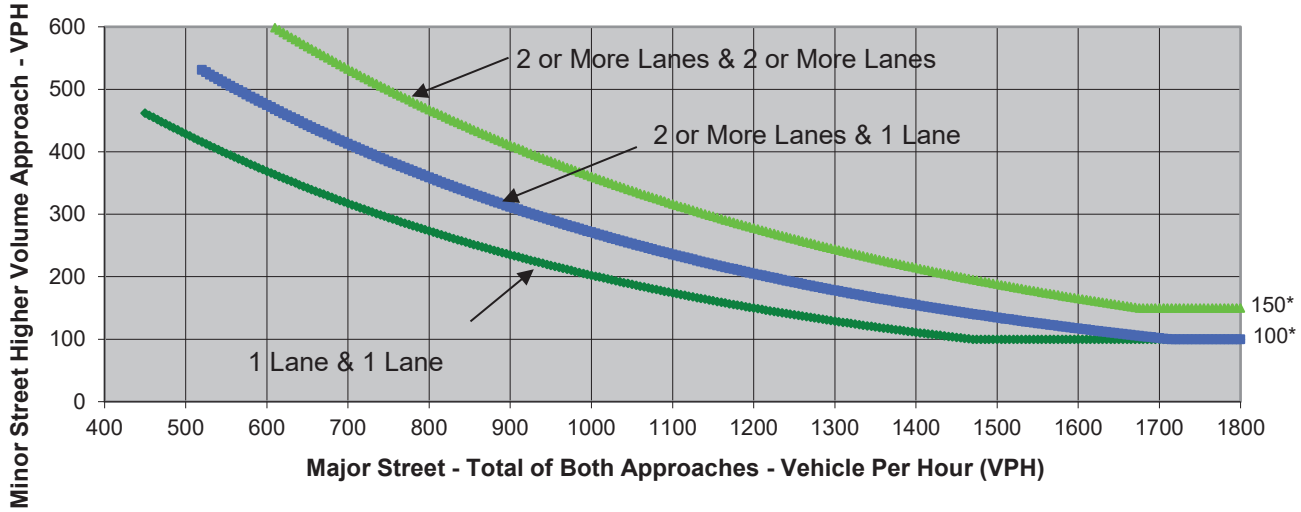
Project	Fairview at Northgate
Scenario	NTNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	480	390	0	0
Right	100	100	650	20
Total	770	490	650	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,260**	**650**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Plaza Dr
Scenario	NTNP
Minor Street	Costco Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	10	100
Through	60	60	0	10
Right	160	10	10	80
Total	230	160	20	190

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.2
Approach with Worst Case Delay	WB
Total Vehicles on Approach	190

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTNP	**0.7**	**190**	**600**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

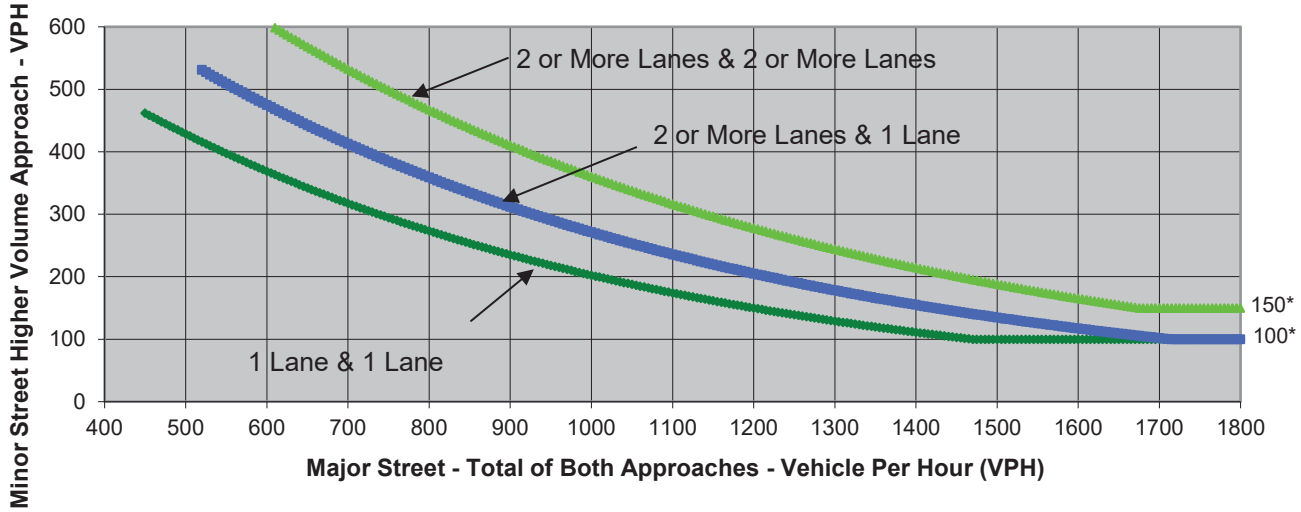
Project	Fairview at Northgate
Scenario	NTNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	10	100
Through	60	60	0	10
Right	160	10	10	80
Total	230	160	20	190

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**390**	**190**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	554	575	0	0
Right	40	0	0	10
Total	594	575	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**0**	**10**	**1,179**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

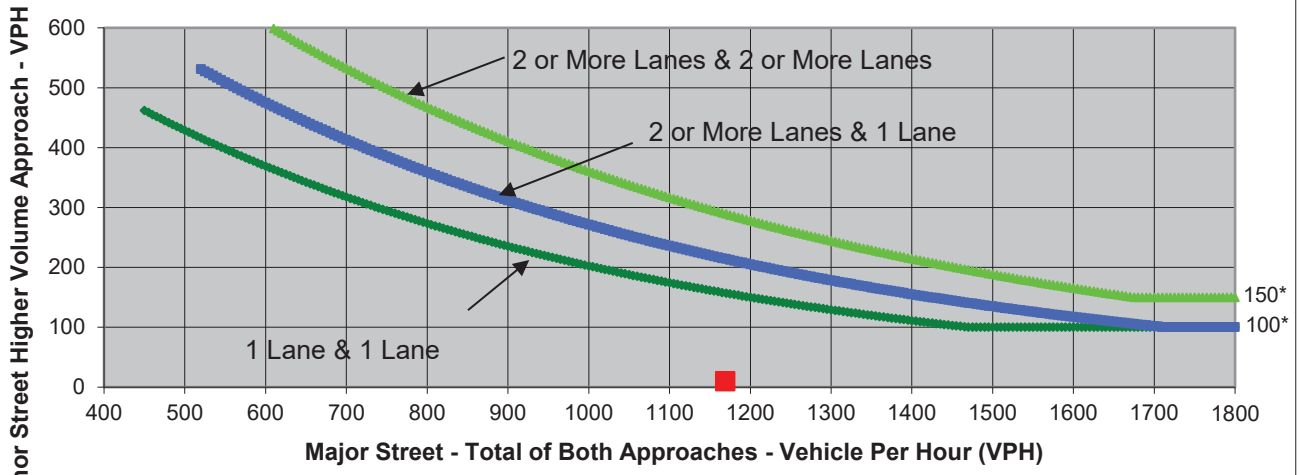
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	554	575	0	0
Right	40	0	0	10
Total	594	575	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,169**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	210	0	0	0
Through	475	645	0	0
Right	184	120	455	33
Total	869	765	455	33

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	15.1
Approach with Worst Case Delay	NB
Total Vehicles on Approach	869

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**3.6**	**455**	**2,122**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

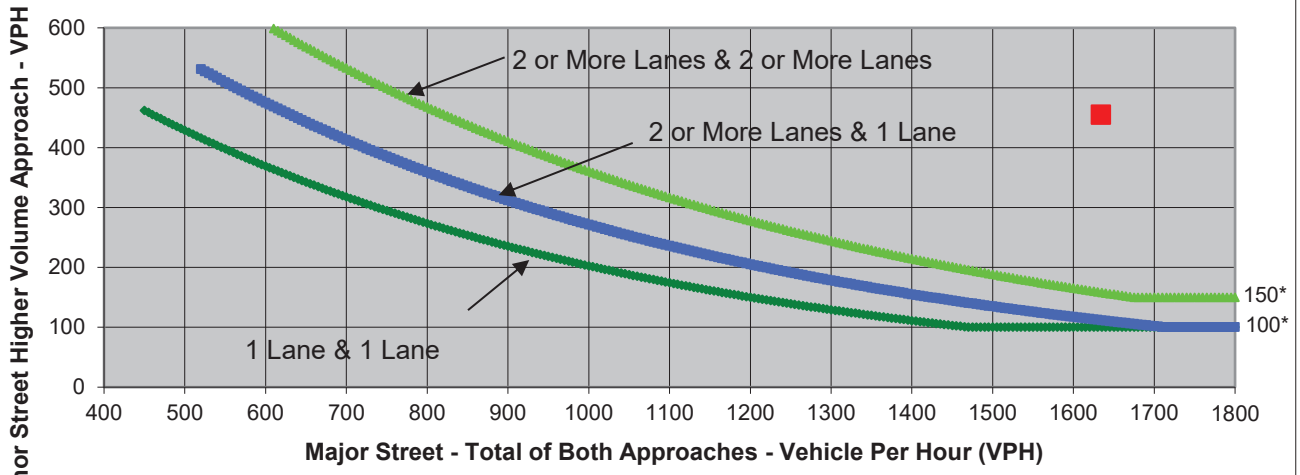
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	210	0	0	0
Through	475	645	0	0
Right	184	120	455	33
Total	869	765	455	33

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,634**	**455**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	19	20	0
Through	80	133	20	10
Right	114	50	60	19
Total	234	202	100	29

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	128.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	29

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**1**	**100**	**565**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

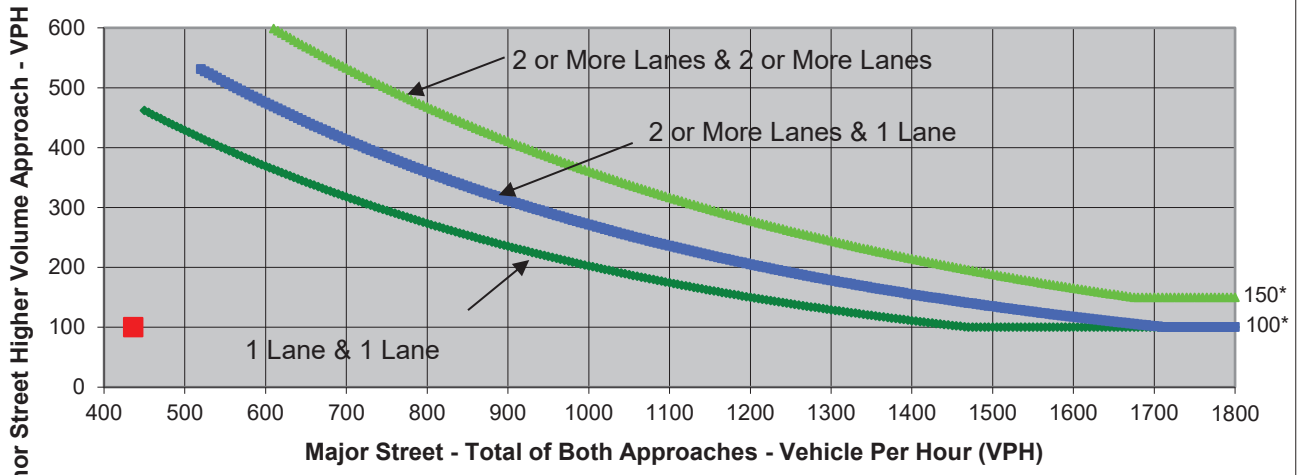
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	19	20	0
Through	80	133	20	10
Right	114	50	60	19
Total	234	202	100	29

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**436**	**100**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	596	607	0	0
Right	30	0	0	20
Total	626	607	0	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	10.3
Approach with Worst Case Delay	WB
Total Vehicles on Approach	20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**0.1**	**20**	**1,253**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

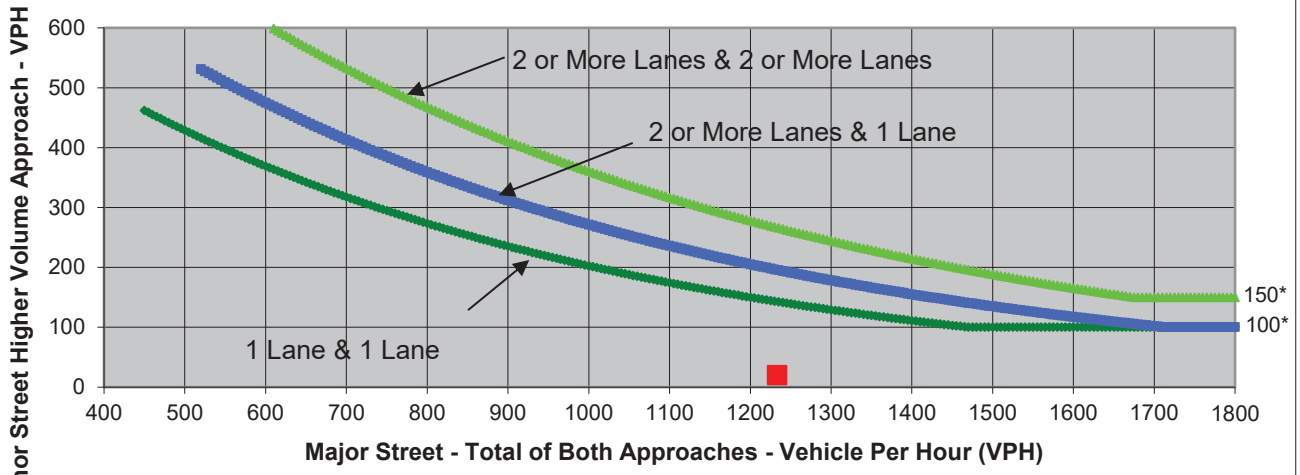
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	596	607	0	0
Right	30	0	0	20
Total	626	607	0	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,233**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	220	0	0	0
Through	455	602	0	0
Right	186	128	482	38
Total	861	730	482	38

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	19.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	38

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**0.2**	**482**	**2,111**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

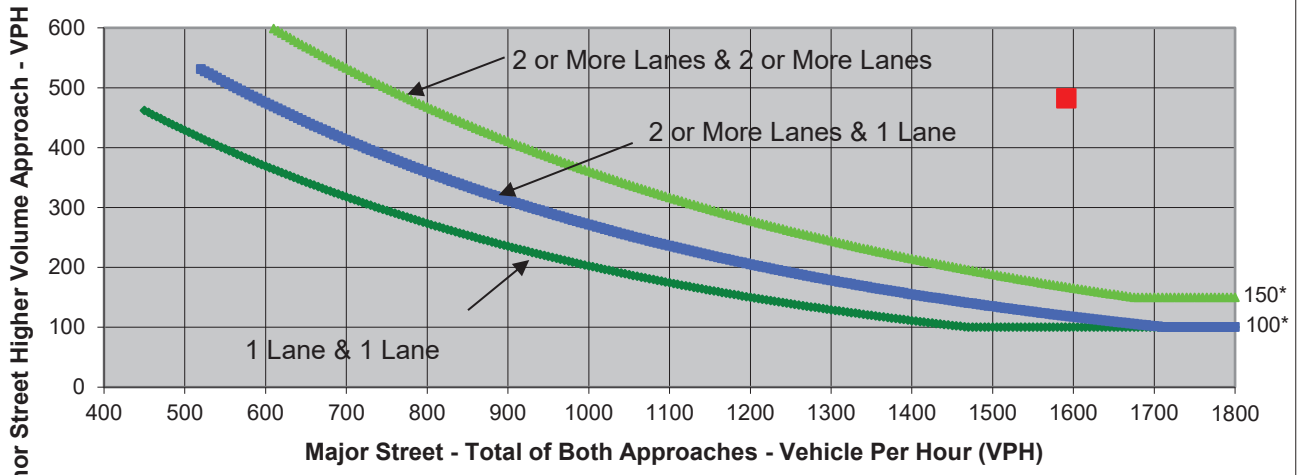
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	220	0	0	0
Through	455	602	0	0
Right	186	128	482	38
Total	861	730	482	38

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,591**	**482**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	30	0	20	0
Through	122	203	20	20
Right	52	30	70	0
Total	204	233	110	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	130
Approach with Worst Case Delay	WB
Total Vehicles on Approach	20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**0.7**	**110**	**567**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

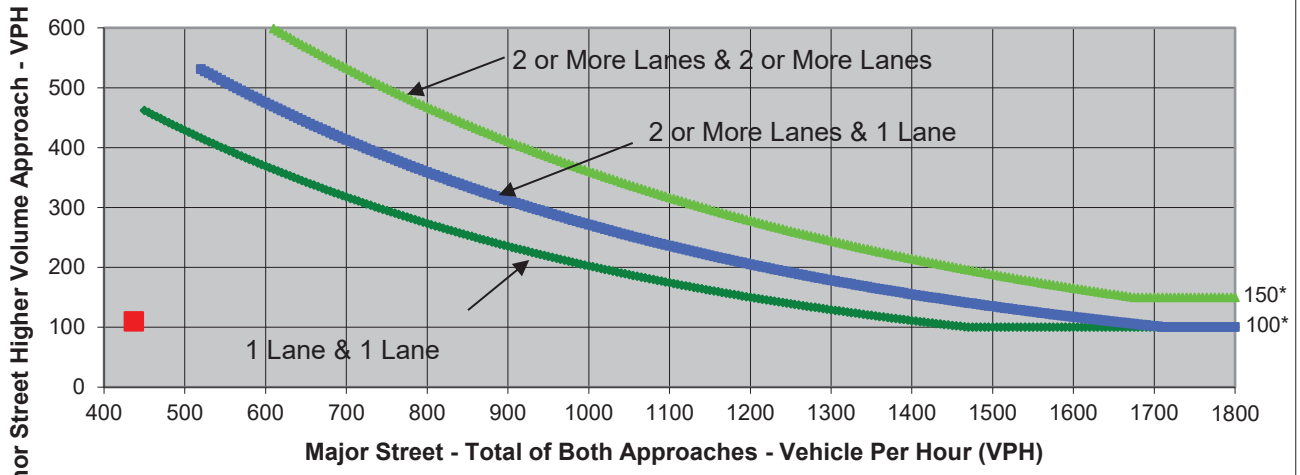
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	30	0	20	0
Through	122	203	20	20
Right	52	30	70	0
Total	204	233	110	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**437**	**110**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	25	0	0
Through	630	703	0	0
Right	50	0	0	45
Total	680	728	0	45

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	205.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	45

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Sat	**2.6**	**45**	**1,453**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

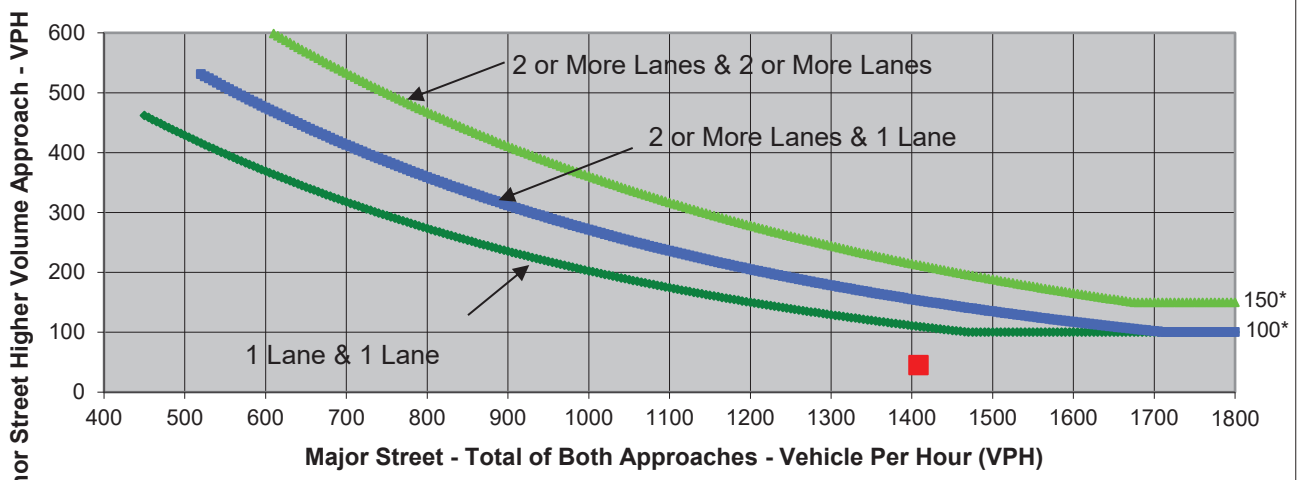
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	25	0	0
Through	630	703	0	0
Right	50	0	0	45
Total	680	728	0	45

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,408**	**45**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	599	634	0	0
Right	170	100	470	30
Total	959	734	470	30

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	11.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	30

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Sat	**0.1**	**470**	**2,193**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

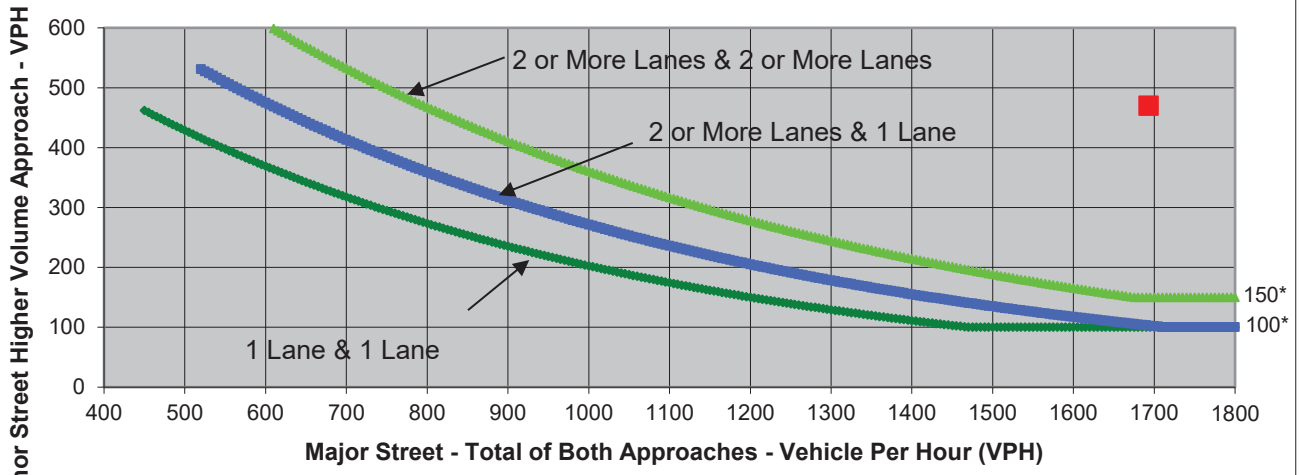
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	599	634	0	0
Right	170	100	470	30
Total	959	734	470	30

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,693**	**470**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	60	0	30	0
Through	170	188	30	30
Right	95	70	90	3
Total	325	258	150	33

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	580.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	33

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Sat	**5.3**	**150**	**766**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

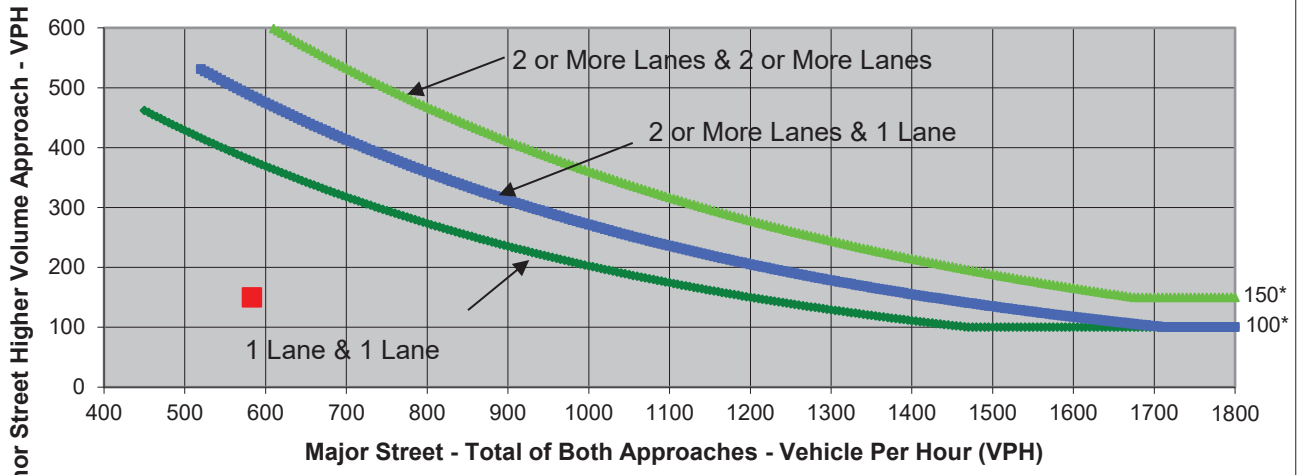
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	60	0	30	0
Through	170	188	30	30
Right	95	70	90	3
Total	325	258	150	33

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**583**	**150**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	320	270	0	0
Right	30	0	0	10
Total	350	270	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**10**	**630**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

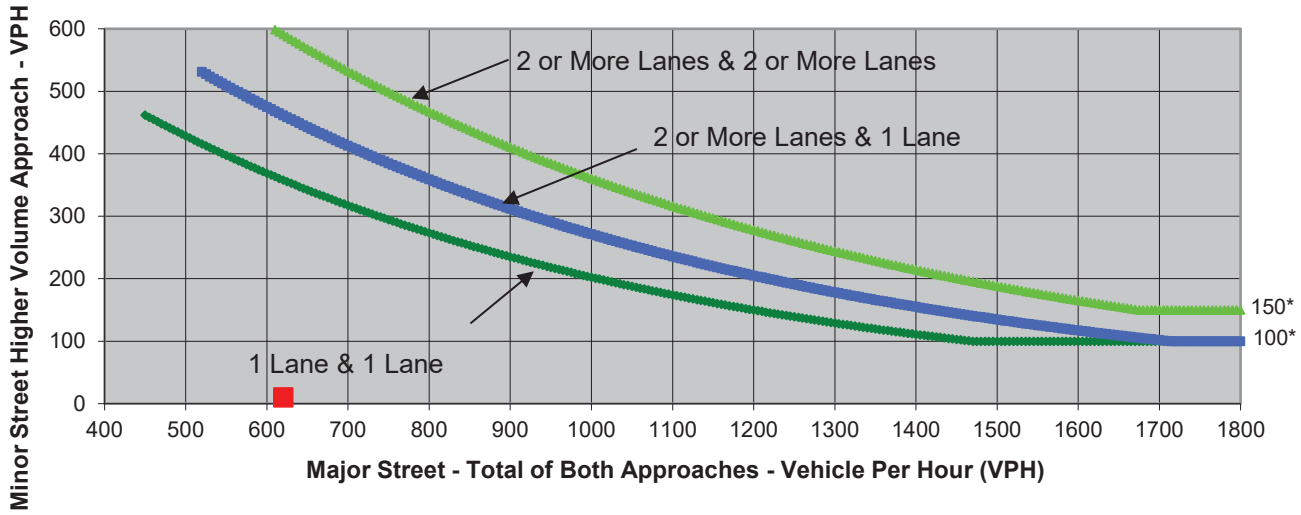
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	320	270	0	0
Right	30	0	0	10
Total	350	270	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**620**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	632	466	0	0
Right	100	121	650	20
Total	922	587	650	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.7
Approach with Worst Case Delay	NB
Total Vehicles on Approach	922

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**1.2**	**650**	**2,179**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	I-80 EB Ramps/Driveway

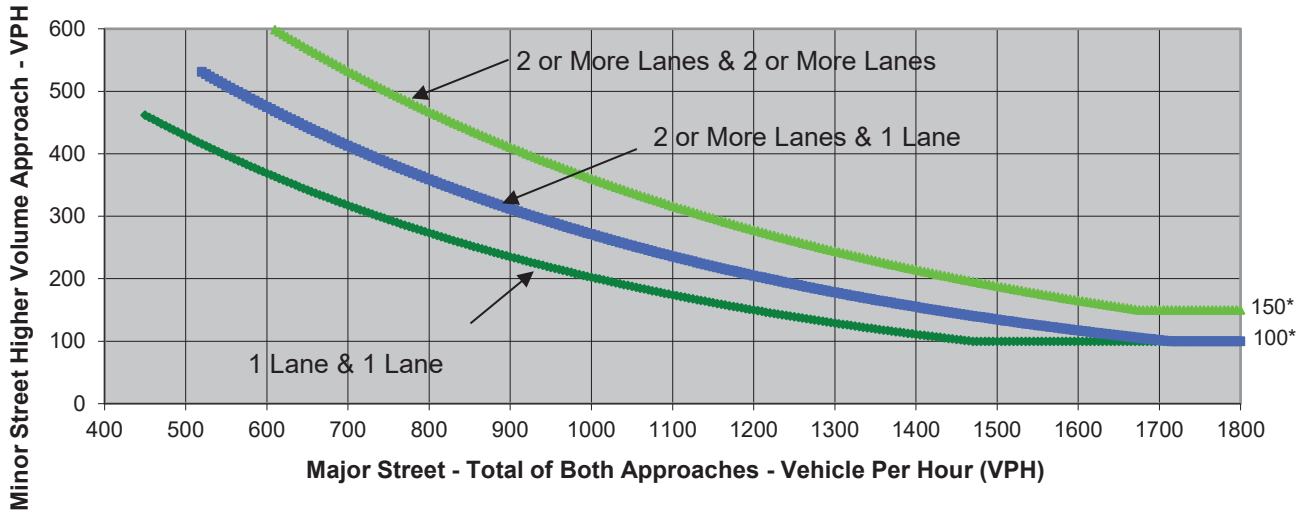
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	632	466	0	0
Right	100	121	650	20
Total	922	587	650	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,509**	**650**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Plaza Dr
Scenario	NTPP
Minor Street	Costco Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	10	90
Through	85	50	0	10
Right	160	10	10	74
Total	255	150	20	174

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.2
Approach with Worst Case Delay	WB
Total Vehicles on Approach	174

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.6**	**174**	**599**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

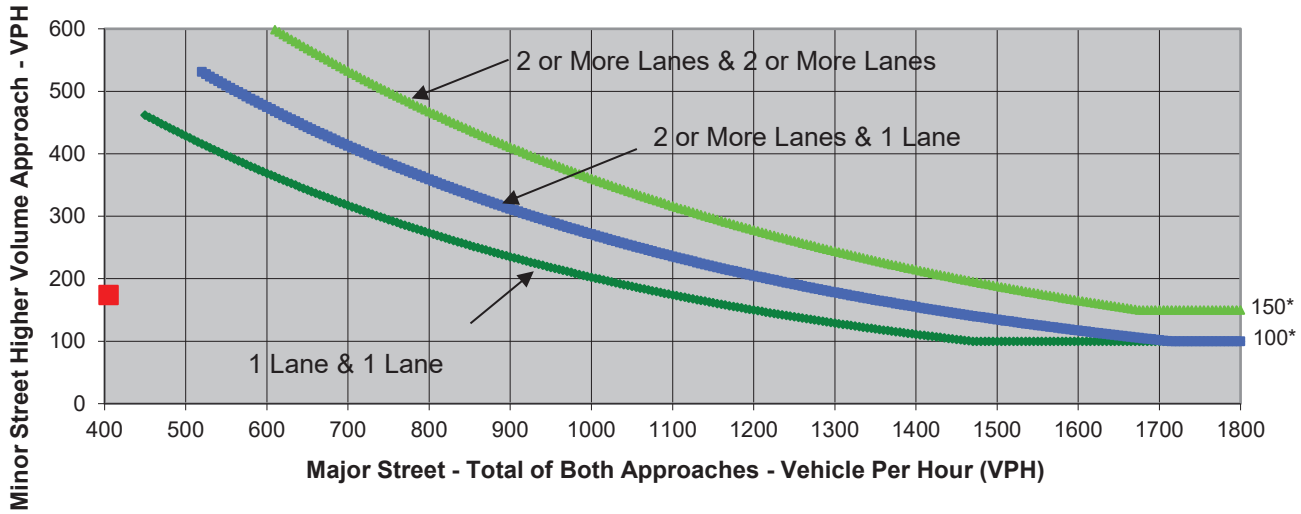
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	10	90
Through	85	50	0	10
Right	160	10	10	74
Total	255	150	20	174

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**405**	**174**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	NTPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	314	448
Right	33	0	39	0
Total	33	0	353	448

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	33

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**33**	**834**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

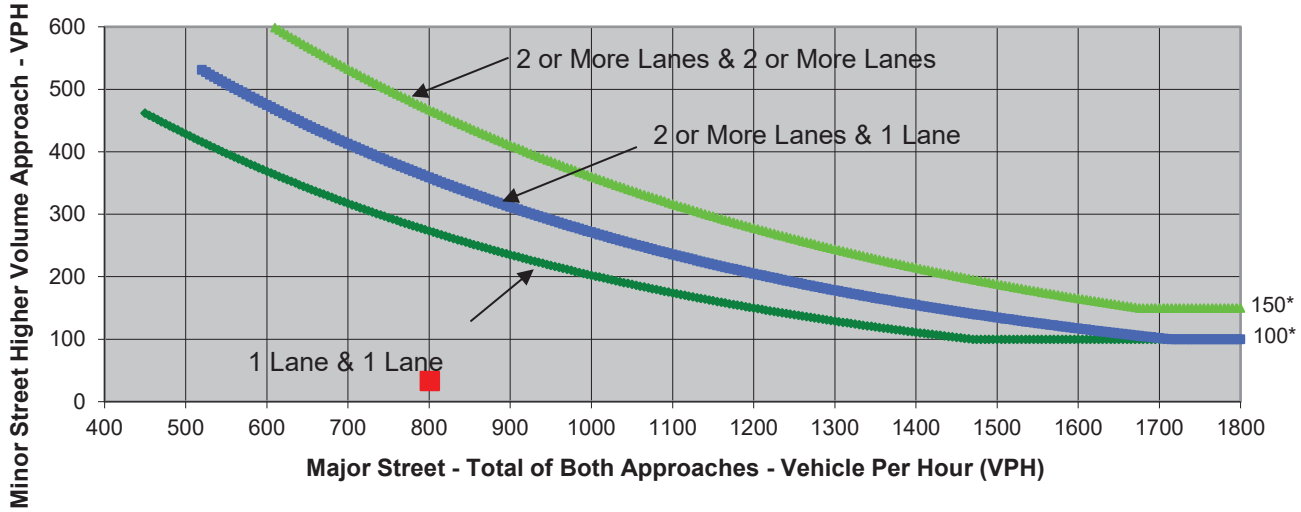
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	314	448
Right	33	0	39	0
Total	33	0	353	448

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**801**	**33**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway I

Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	121	0	268
Through	1,114	1,227	0	0
Right	249	0	0	101
Total	1,363	1,348	0	369

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.4
Approach with Worst Case Delay	WB
Total Vehicles on Approach	369

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.5**	**369**	**3,080**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway I

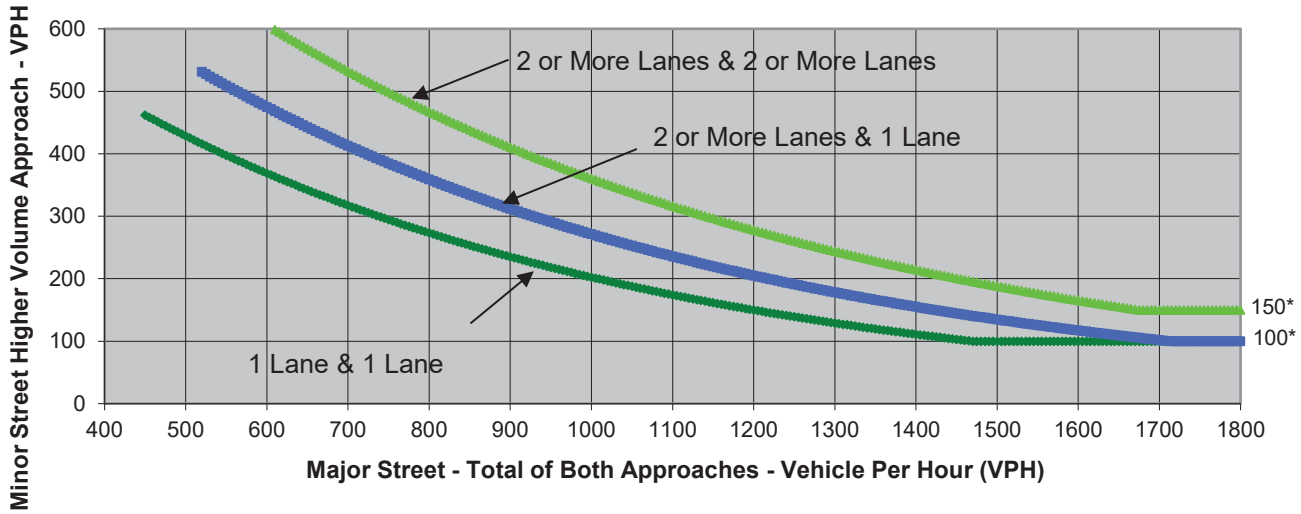
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	121	0	268
Through	1,114	1,227	0	0
Right	249	0	0	101
Total	1,363	1,348	0	369

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,711**	**369**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	201
Through	917	1,036	0	0
Right	187	0	0	76
Total	1,104	1,126	0	277

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	277

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.4**	**277**	**2,507**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway III

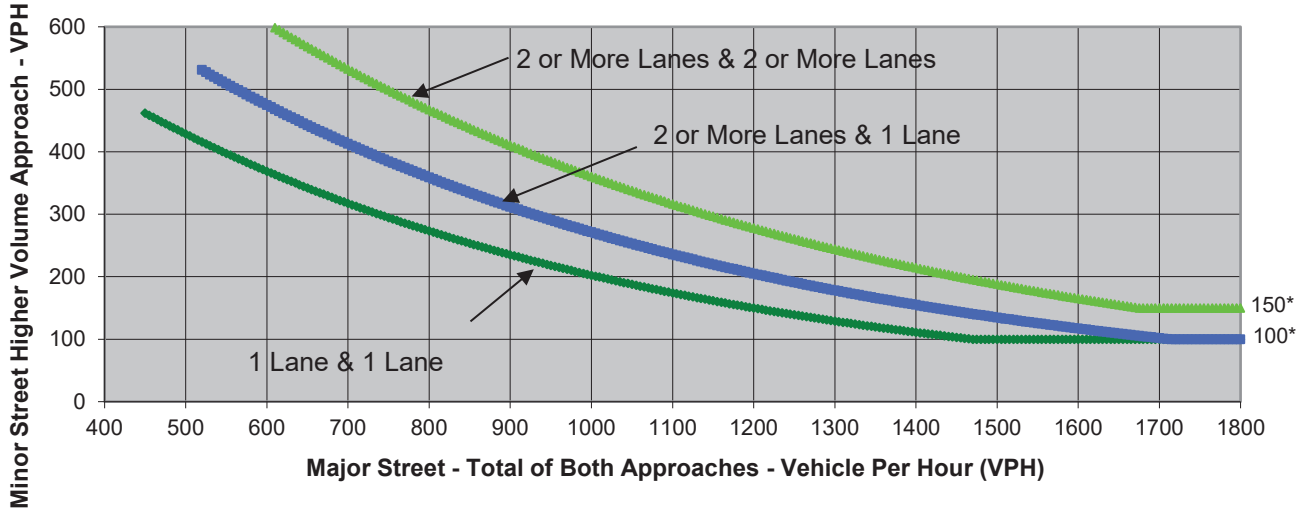
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	90	0	201
Through	917	1,036	0	0
Right	187	0	0	76
Total	1,104	1,126	0	277

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,230**	**277**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	834	669	0	0
Right	50	0	0	10
Total	884	669	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**10**	**1,563**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

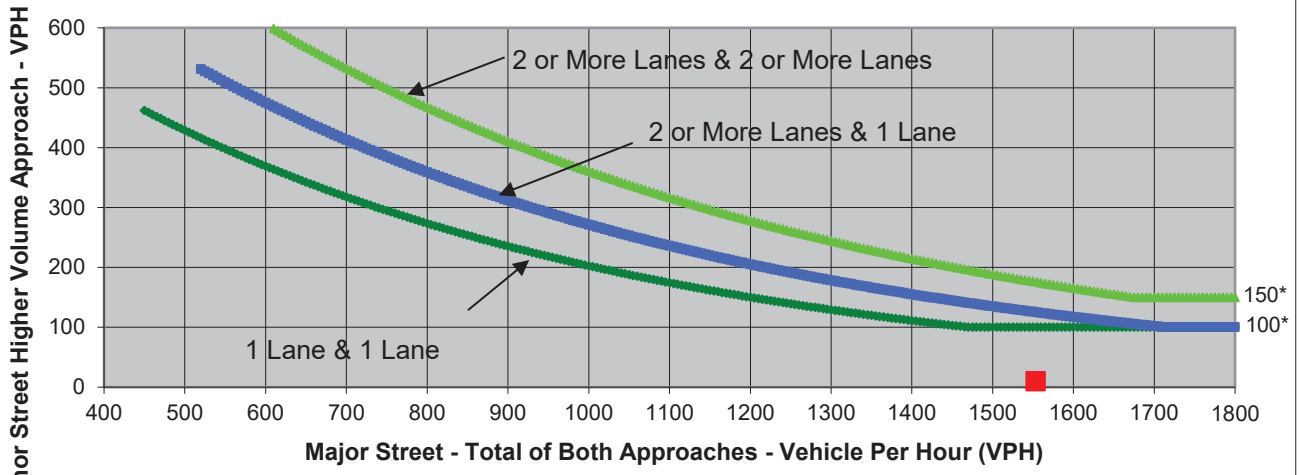
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	834	669	0	0
Right	50	0	0	10
Total	884	669	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,553**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	210	0	0	0
Through	1,466	1,191	0	0
Right	184	242	450	33
Total	1,860	1,433	450	33

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	42.4
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,860

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**21.9**	**450**	**3,776**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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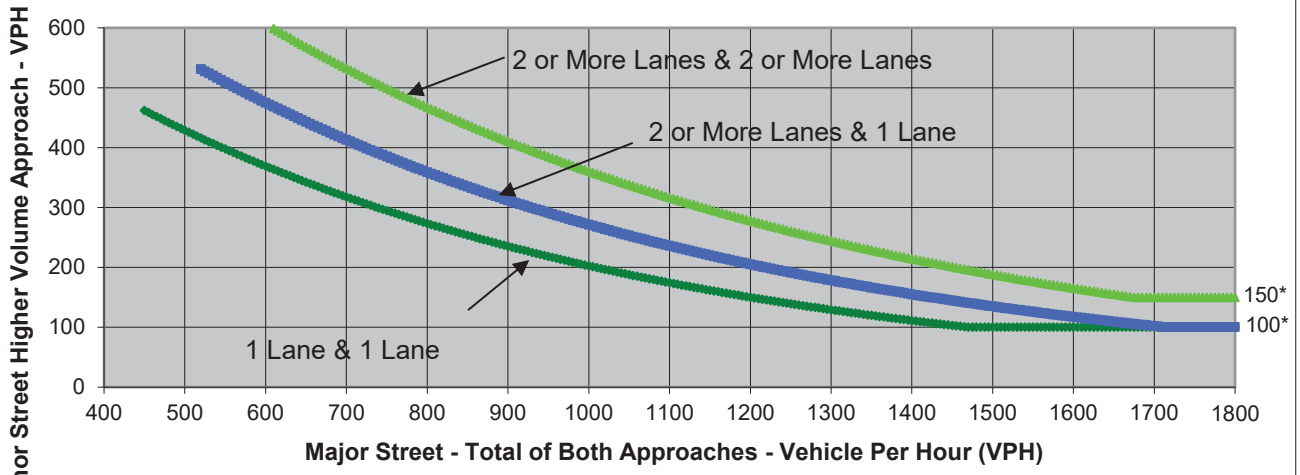
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	210	0	0	0
Through	1,466	1,191	0	0
Right	184	242	450	33
Total	1,860	1,433	450	33

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,293**	**450**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	62	20	97
Through	115	201	7	10
Right	151	50	60	63
Total	306	313	87	170

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	16.5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	170

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.8**	**170**	**876**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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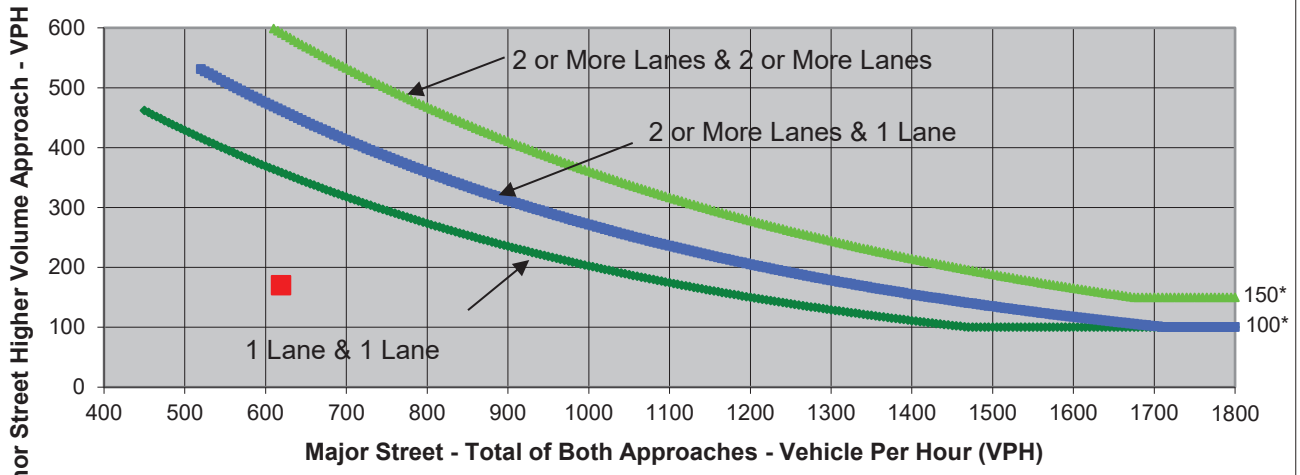
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	62	20	97
Through	115	201	7	10
Right	151	50	60	63
Total	306	313	87	170

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**619**	**170**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	393	433
Right	9	0	33	0
Total	9	0	426	433

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.1
Approach with Worst Case Delay	NB
Total Vehicles on Approach	9

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**9**	**868**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

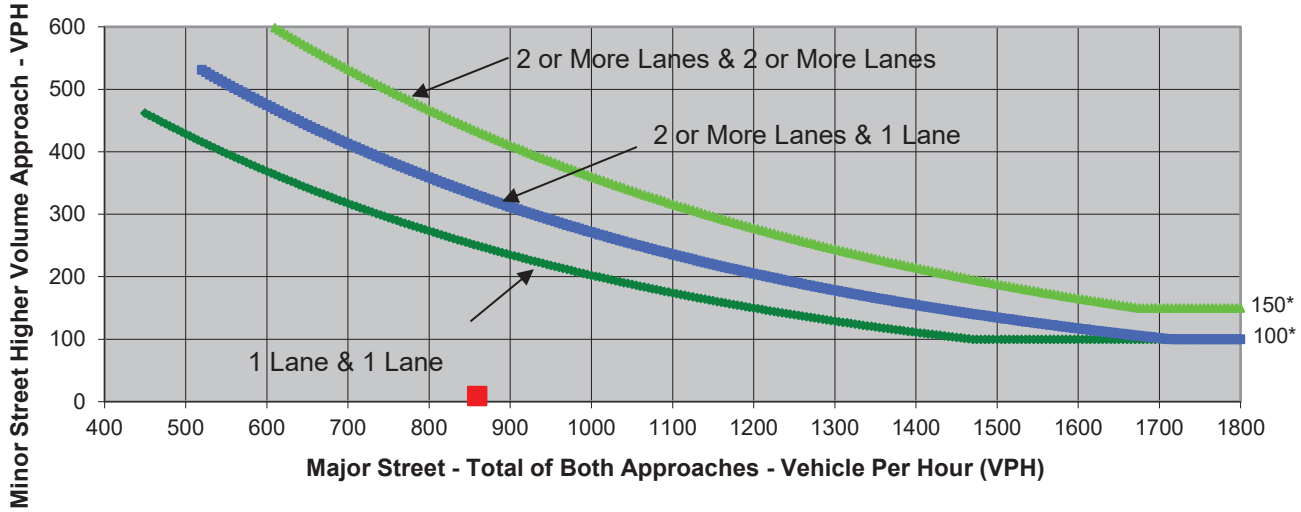
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	393	433
Right	9	0	33	0
Total	9	0	426	433

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**859**	**9**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	0
Through	1,338	1,268	0	0
Right	153	0	0	125
Total	1,491	1,282	0	125

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	125

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.3**	**125**	**2,898**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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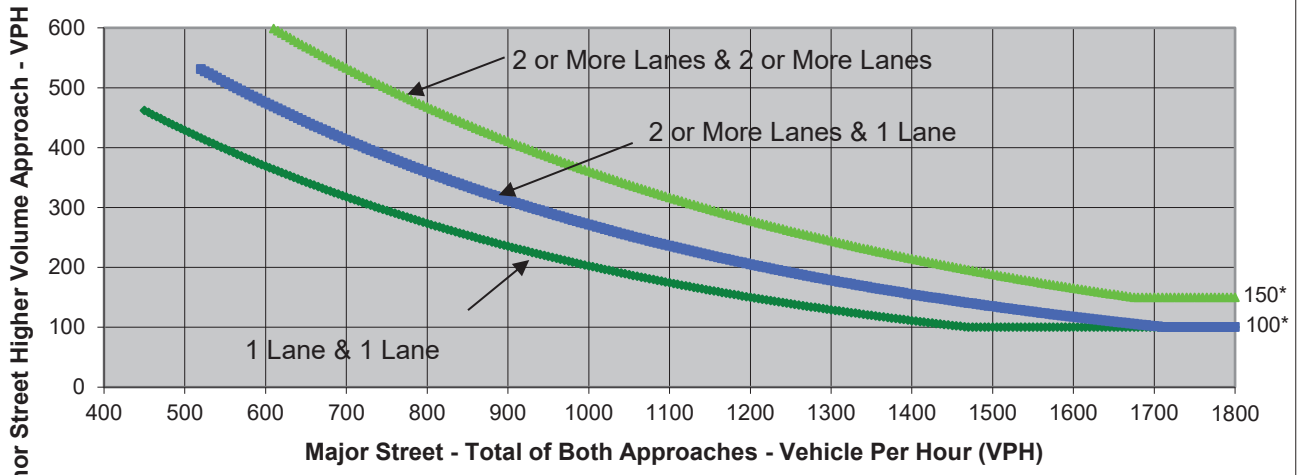
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	0
Through	1,338	1,268	0	0
Right	153	0	0	125
Total	1,491	1,282	0	125

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,773**	**125**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	57	0	77
Through	1,124	969	0	0
Right	226	0	0	125
Total	1,350	1,026	0	202

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	49.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	202

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**2.8**	**202**	**2,578**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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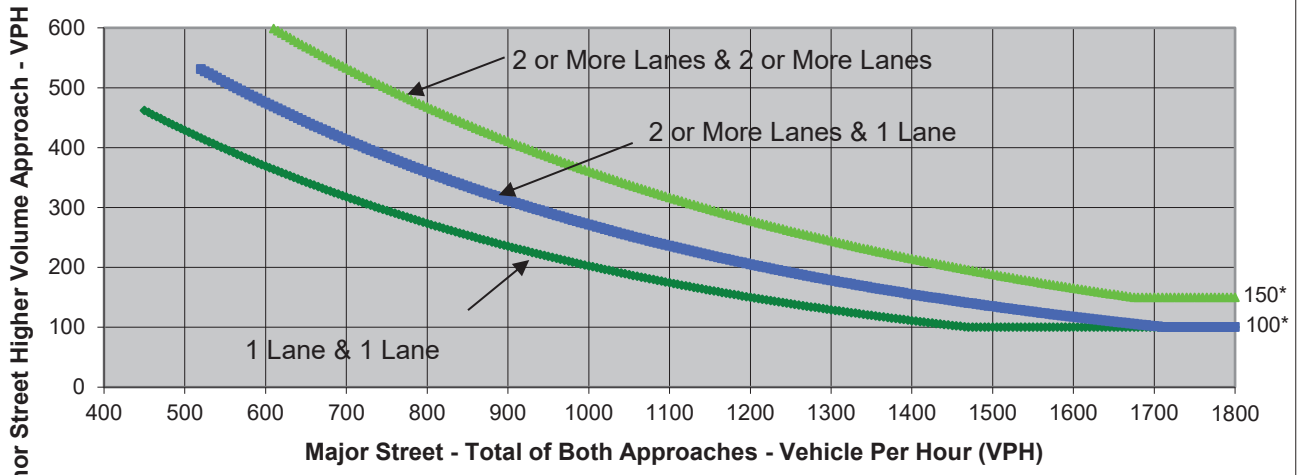
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	57	0	77
Through	1,124	969	0	0
Right	226	0	0	125
Total	1,350	1,026	0	202

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,376**	**202**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	986	727	0	0
Right	30	0	0	20
Total	1,016	727	0	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	5.4
Approach with Worst Case Delay	WB
Total Vehicles on Approach	20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**20**	**1,763**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

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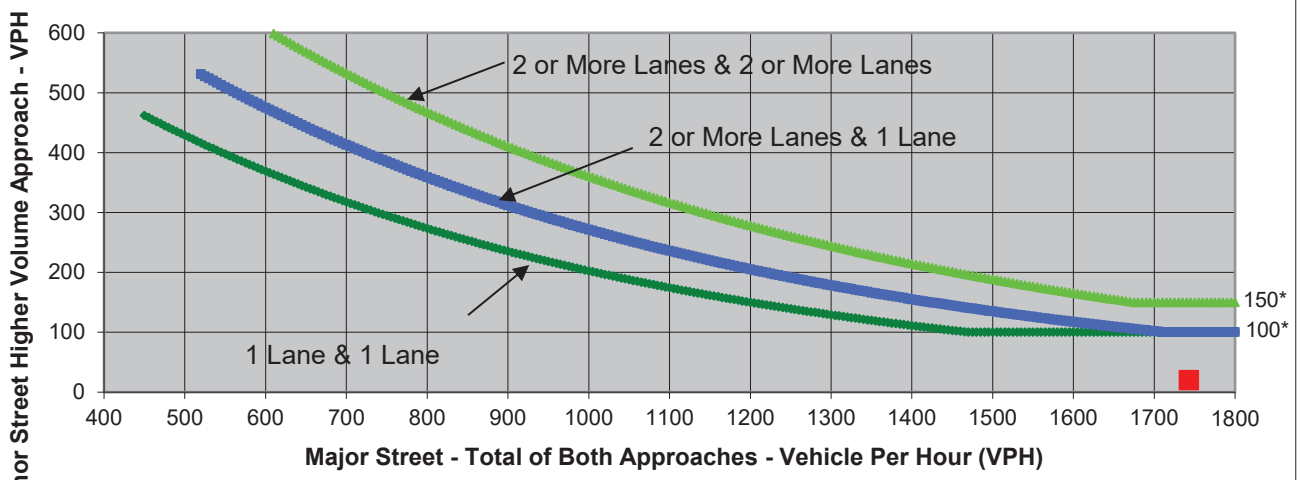
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	986	727	0	0
Right	30	0	0	20
Total	1,016	727	0	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,743**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	220	0	0	0
Through	1,577	1,256	0	0
Right	186	268	480	38
Total	1,983	1,524	480	38

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	60.8
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,983

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**33.5**	**480**	**4,025**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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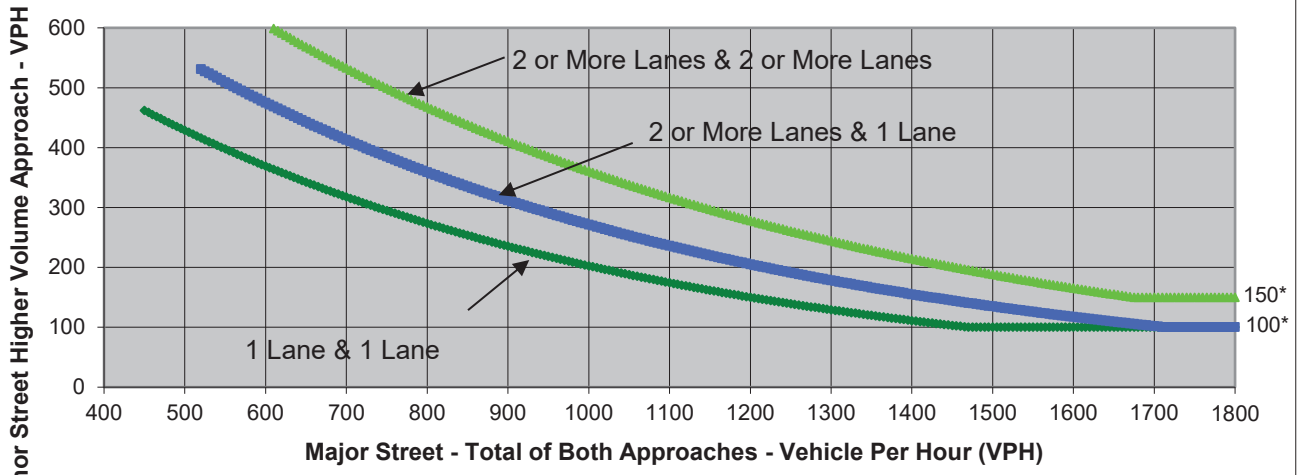
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	220	0	0	0
Through	1,577	1,256	0	0
Right	186	268	480	38
Total	1,983	1,524	480	38

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,507**	**480**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	30	41	20	100
Through	173	244	11	20
Right	126	30	69	49
Total	329	315	100	169

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	18.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	169

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.8**	**169**	**913**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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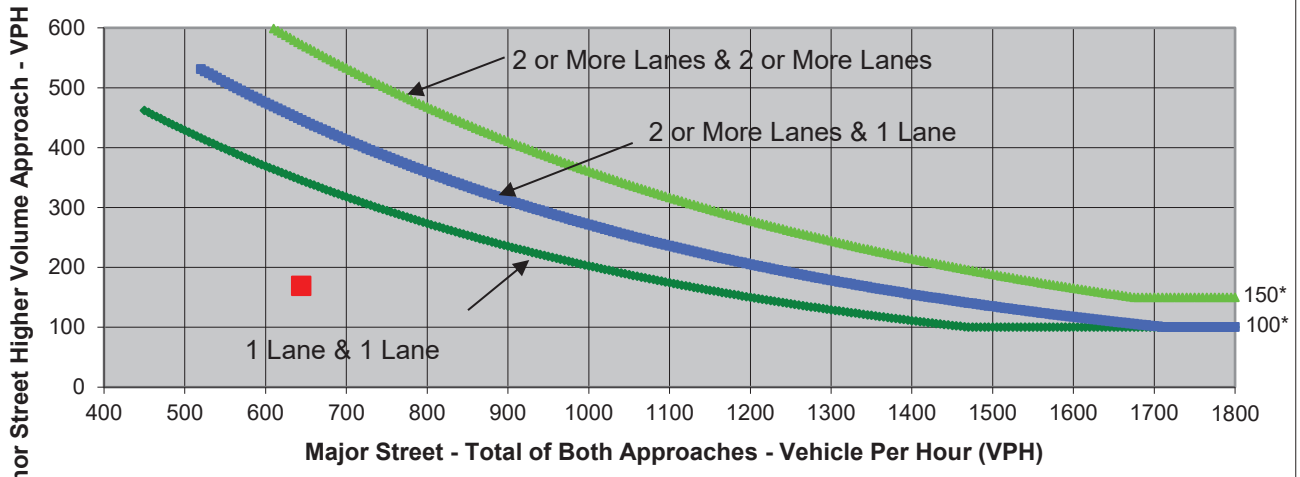
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	30	41	20	100
Through	173	244	11	20
Right	126	30	69	49
Total	329	315	100	169

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**644**	**169**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	372	440
Right	10	0	38	0
Total	10	0	410	440

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**10**	**860**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

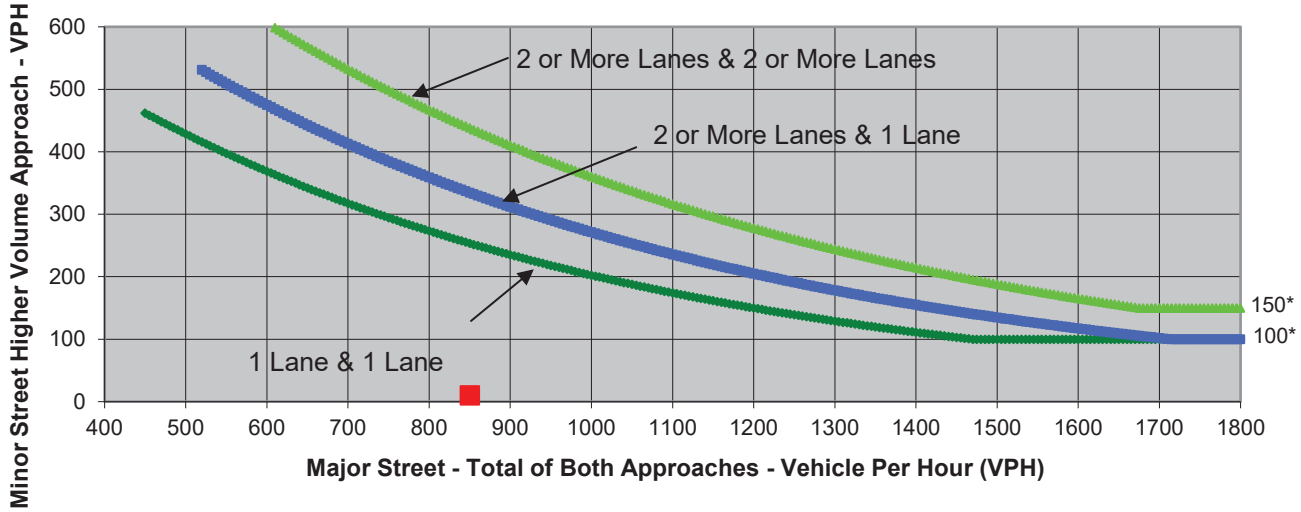
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	372	440
Right	10	0	38	0
Total	10	0	410	440

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**850**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,418	1,317	0	0
Right	176	0	0	144
Total	1,594	1,334	0	144

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	144

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.4**	**144**	**3,072**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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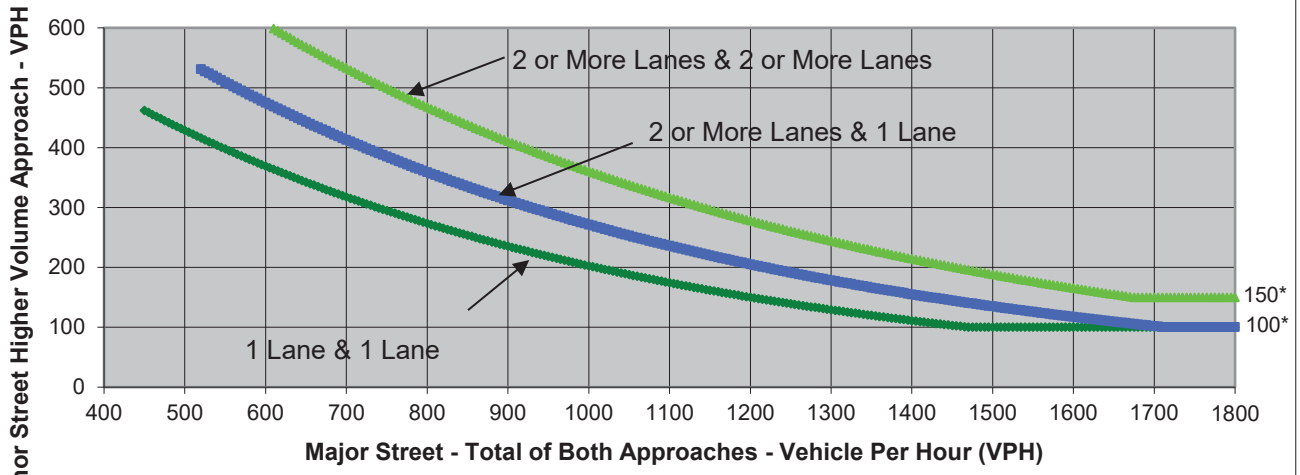
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,418	1,317	0	0
Right	176	0	0	144
Total	1,594	1,334	0	144

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,928**	**144**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,172	974	0	0
Right	260	0	0	144
Total	1,432	1,040	0	233

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	73.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	233

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**4.8**	**233**	**2,705**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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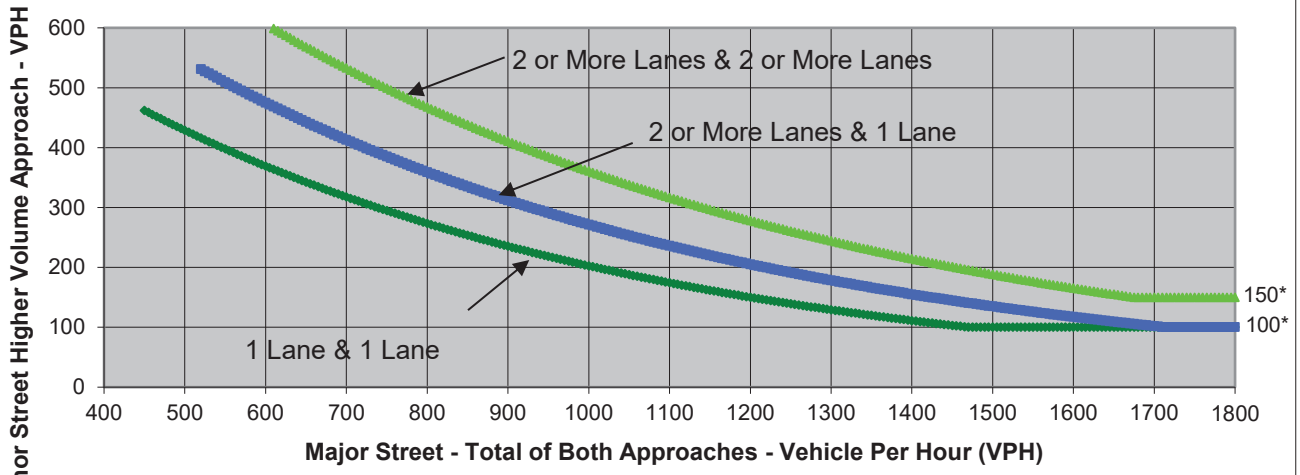
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,172	974	0	0
Right	260	0	0	144
Total	1,432	1,040	0	233

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,472**	**233**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	25	0	0
Through	1,053	816	0	0
Right	50	0	0	45
Total	1,103	841	0	45

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	45

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0.1**	**45**	**1,989**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

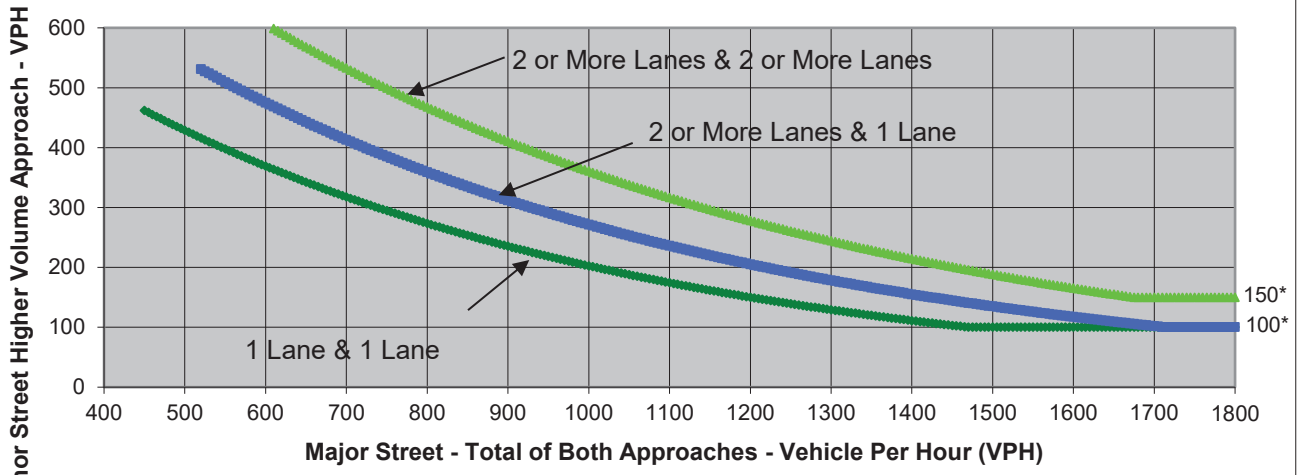
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	25	0	0
Through	1,053	816	0	0
Right	50	0	0	45
Total	1,103	841	0	45

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,944**	**45**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	1,772	1,344	0	0
Right	170	234	470	30
Total	2,132	1,578	470	30

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	35.3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	2,132

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**20.9**	**470**	**4,210**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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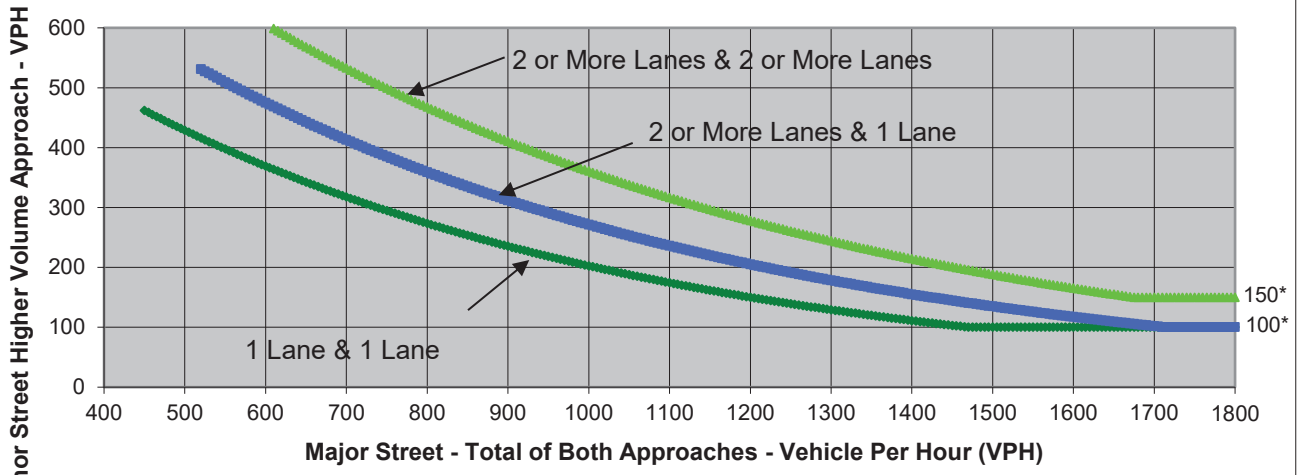
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	I-80 EB Ramps/Driveway	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	190	0	0	0
Through	1,772	1,344	0	0
Right	170	234	470	30
Total	2,132	1,578	470	30

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	I-80 EB Ramps/Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,710**	**470**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	60	68	30	105
Through	199	281	17	16
Right	198	70	89	73
Total	457	419	136	194

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	33.5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	194

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**1.8**	**194**	**1,206**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

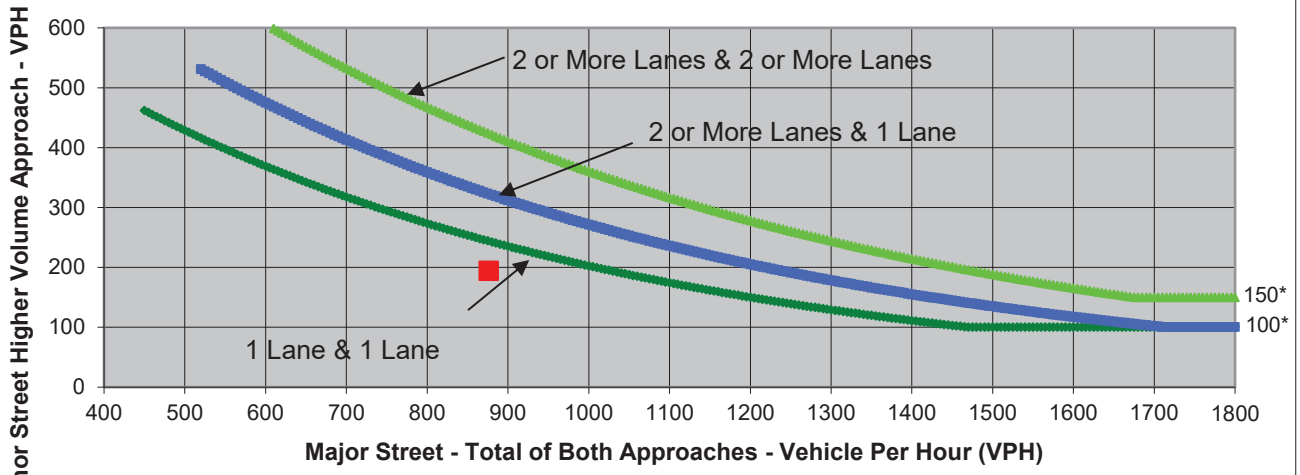
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	60	68	30	105
Through	199	281	17	16
Right	198	70	89	73
Total	457	419	136	194

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**876**	**194**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	478	523
Right	12	0	30	0
Total	12	0	508	523

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.2
Approach with Worst Case Delay	NB
Total Vehicles on Approach	12

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**0**	**12**	**1,043**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

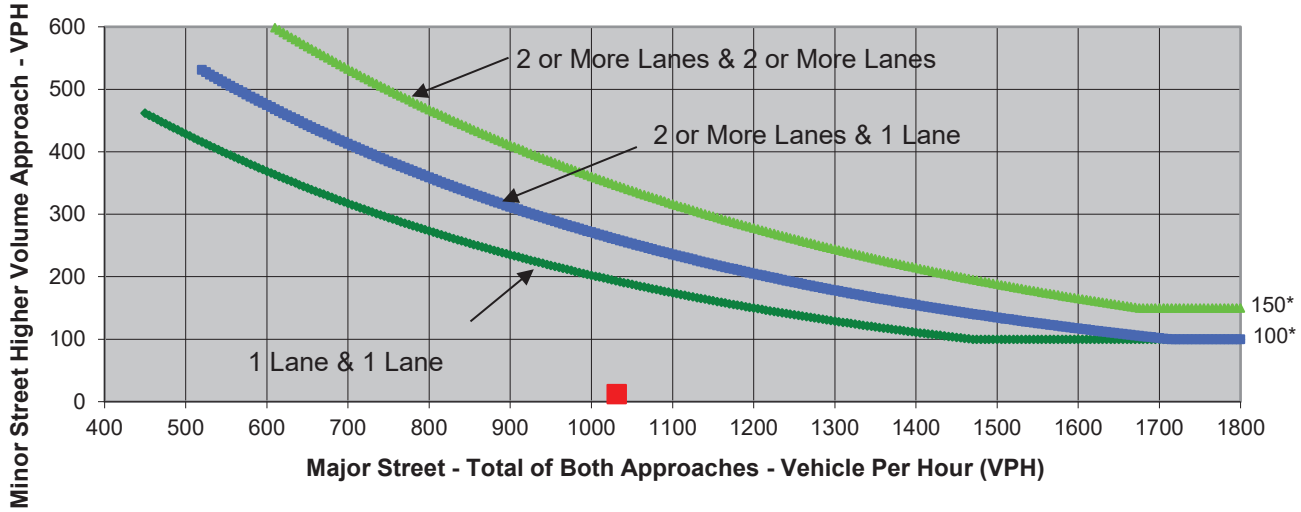
Project	Fairview at Northgate
Scenario	NTPP
Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	478	523
Right	12	0	30	0
Total	12	0	508	523

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,031**	**12**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,588	1,538	0	0
Right	185	0	0	156
Total	1,773	1,555	0	156

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	29
Approach with Worst Case Delay	WB
Total Vehicles on Approach	156

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**1.3**	**156**	**3,484**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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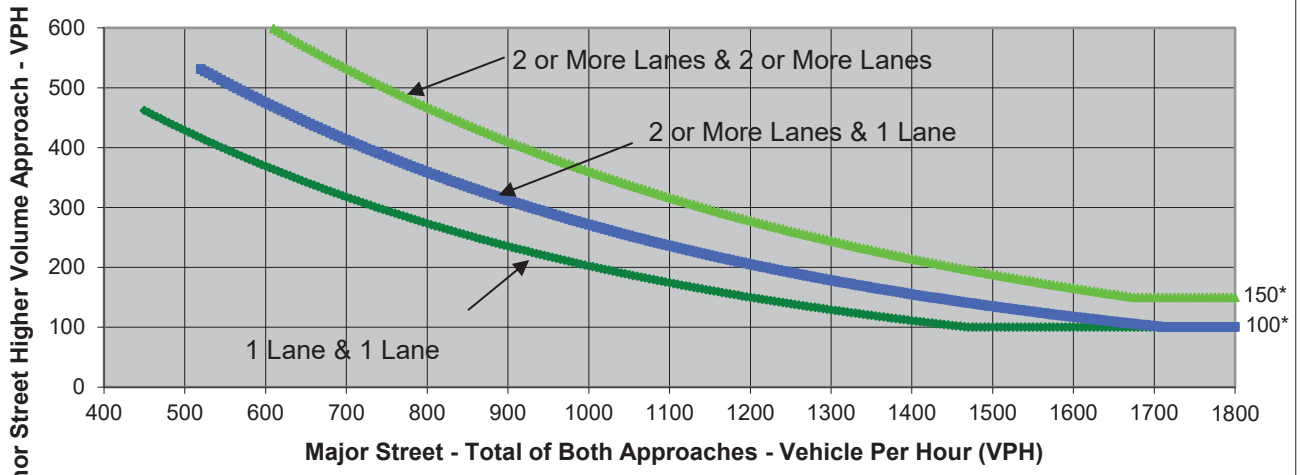
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,588	1,538	0	0
Right	185	0	0	156
Total	1,773	1,555	0	156

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,328**	**156**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	69	0	96
Through	1,341	1,161	0	0
Right	273	0	0	156
Total	1,614	1,230	0	252

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	38.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	252

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
NTPP	**2.7**	**252**	**3,096**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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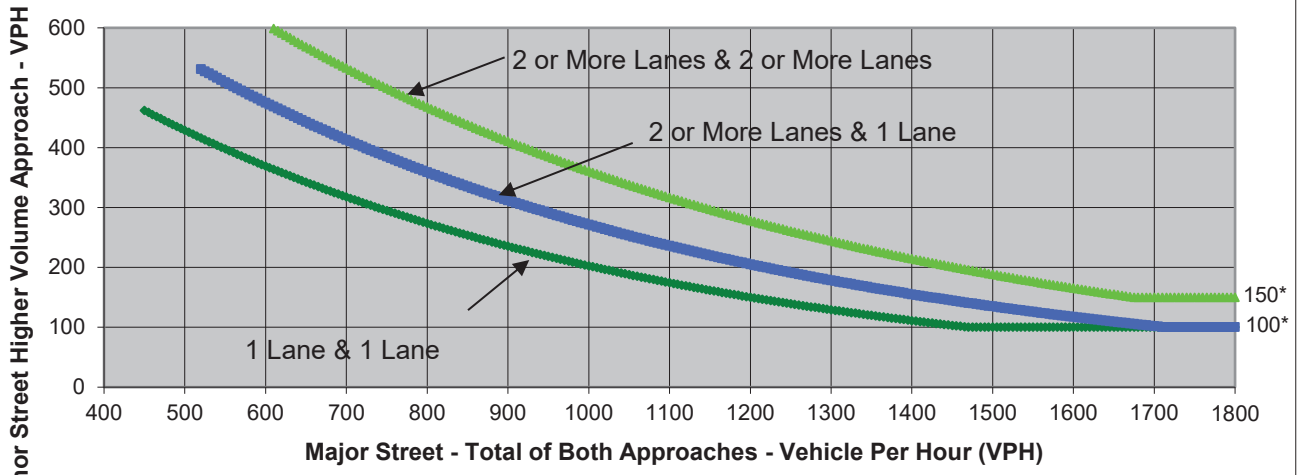
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	NTPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	69	0	96
Through	1,341	1,161	0	0
Right	273	0	0	156
Total	1,614	1,230	0	252

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,844**	**252**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	CMNP
Minor Street	Target Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	300	290	0	0
Right	30	0	0	10
Total	330	290	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMNP	**0**	**10**	**630**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

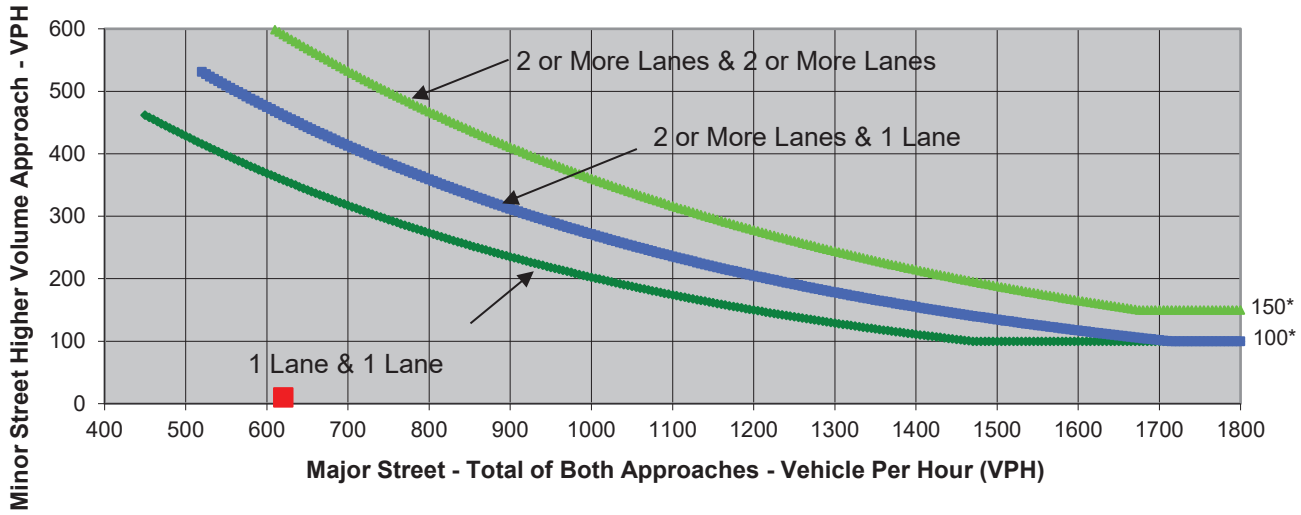
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMNP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	300	290	0	0
Right	30	0	0	10
Total	330	290	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**620**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	CMNP
Minor Street	Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	550	560	0	0
Right	110	0	760	0
Total	660	560	760	0

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	1.5
Approach with Worst Case Delay	NB
Total Vehicles on Approach	660

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMNP	**0.3**	**760**	**1,980**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Driveway

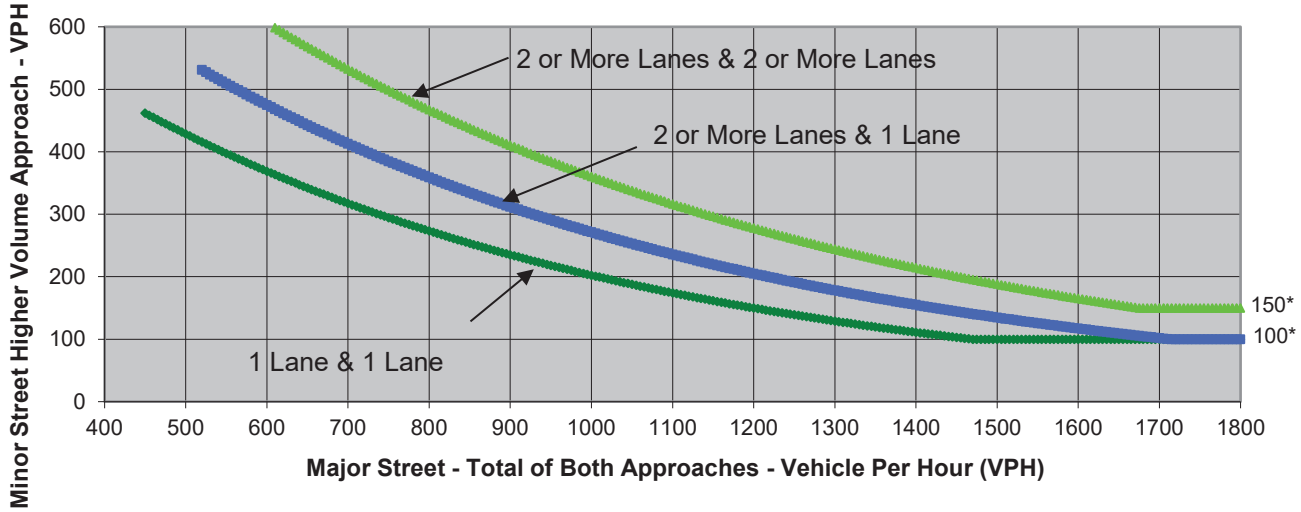
Project	Fairview at Northgate
Scenario	CMNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	550	560	0	0
Right	110	0	760	0
Total	660	560	760	0

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,220**	**760**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Plaza Dr
Scenario	CMNP
Minor Street	Costco Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	0	110
Through	70	60	0	0
Right	190	10	10	90
Total	270	160	10	200

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	200

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMNP	**0.8**	**200**	**640**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

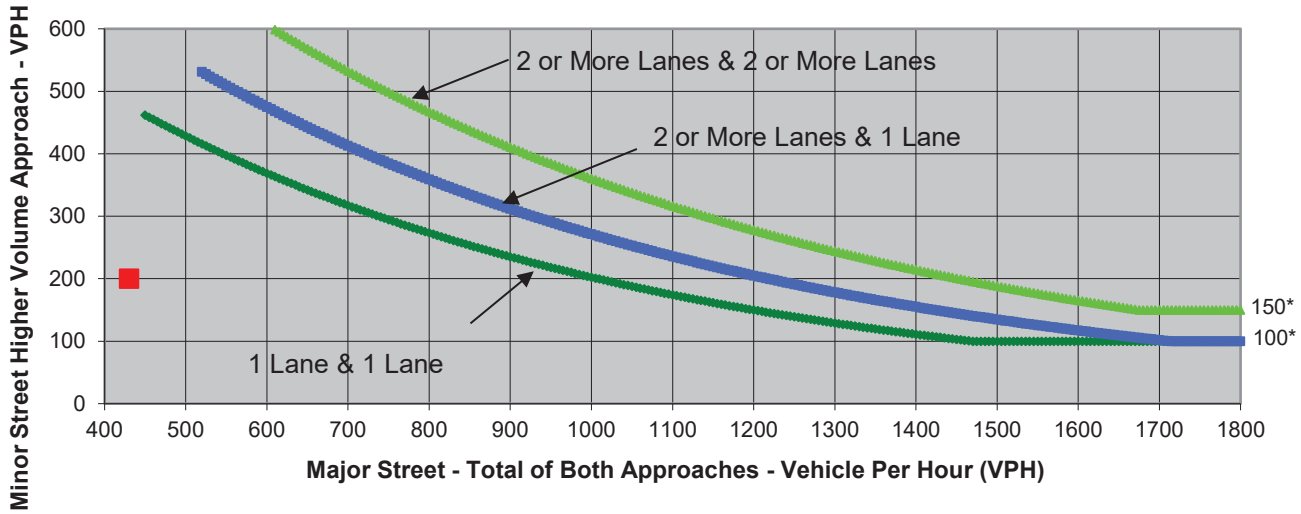
Project	Fairview at Northgate
Scenario	CMNP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	0	110
Through	70	60	0	0
Right	190	10	10	90
Total	270	160	10	200

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**430**	**200**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	455	519	0	0
Right	42	0	0	8
Total	497	519	0	8

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.8
Approach with Worst Case Delay	WB
Total Vehicles on Approach	8

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**0**	**8**	**1,024**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

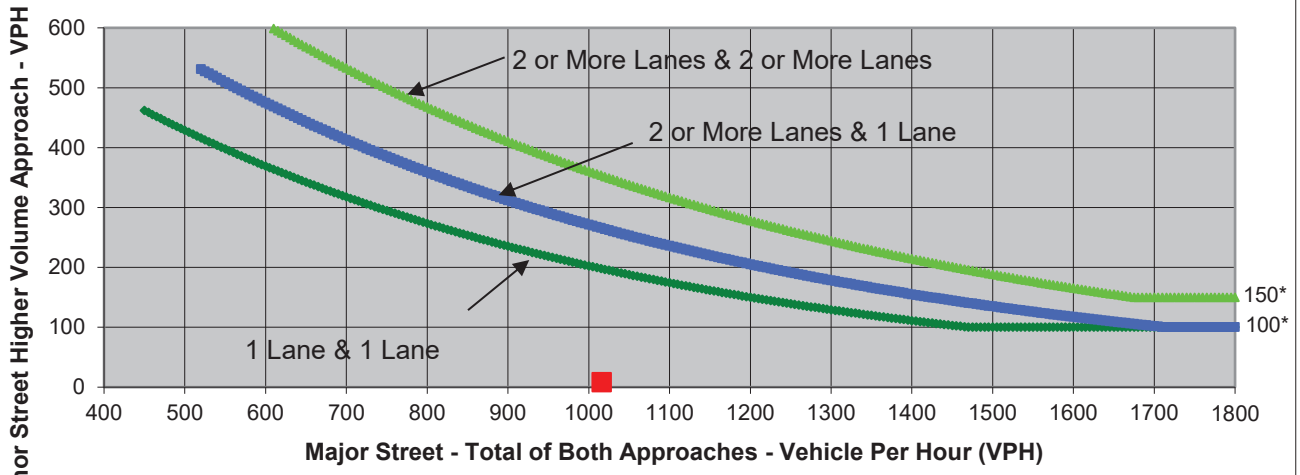
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	455	519	0	0
Right	42	0	0	8
Total	497	519	0	8

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,016**	**8**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Driveway	Project	Fairview at Northgate
Minor Street	Admiral Callaghan Ln	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	747	983	0	0
Right	123	0	0	17
Total	870	983	0	17

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	9.1
Approach with Worst Case Delay	NB
Total Vehicles on Approach	870

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**2.2**	**983**	**1,870**
Limiting Value	**5**	**150**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

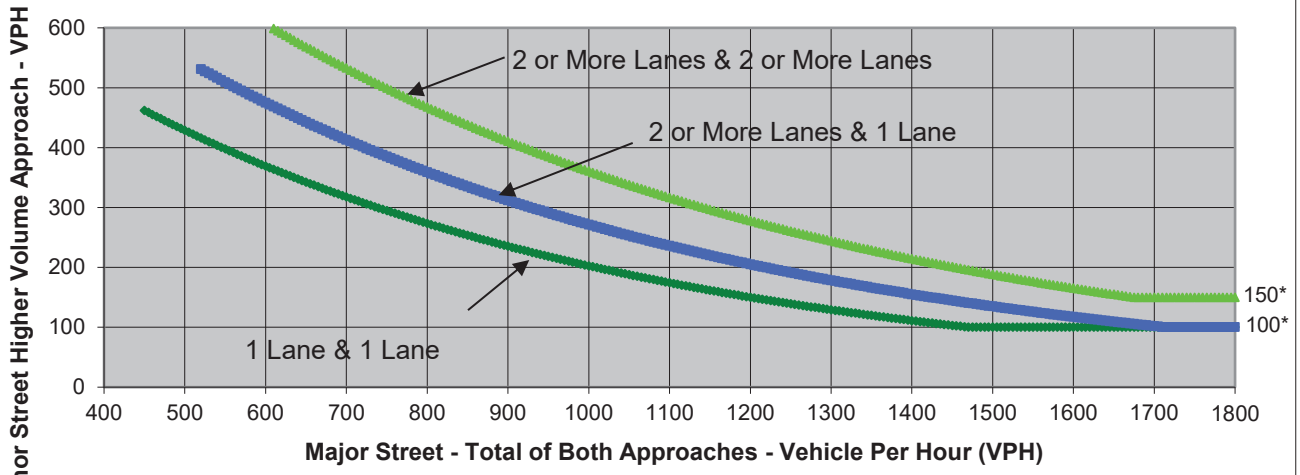
Major Street	Driveway	Project	Fairview at Northgate
Minor Street	Admiral Callaghan Ln	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	747	983	0	0
Right	123	0	0	17
Total	870	983	0	17

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Driveway	Admiral Callaghan Ln	
Number of Approach Lanes	**1**	**2**	**NO**
Traffic Volume (VPH) *	**17**	**983**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Weekday
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	37	118	22	192
Through	118	265	23	14
Right	298	46	52	123
Total	453	429	97	329

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	420.5
Approach with Worst Case Delay	WB
Total Vehicles on Approach	329

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**38.4**	**329**	**1,308**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

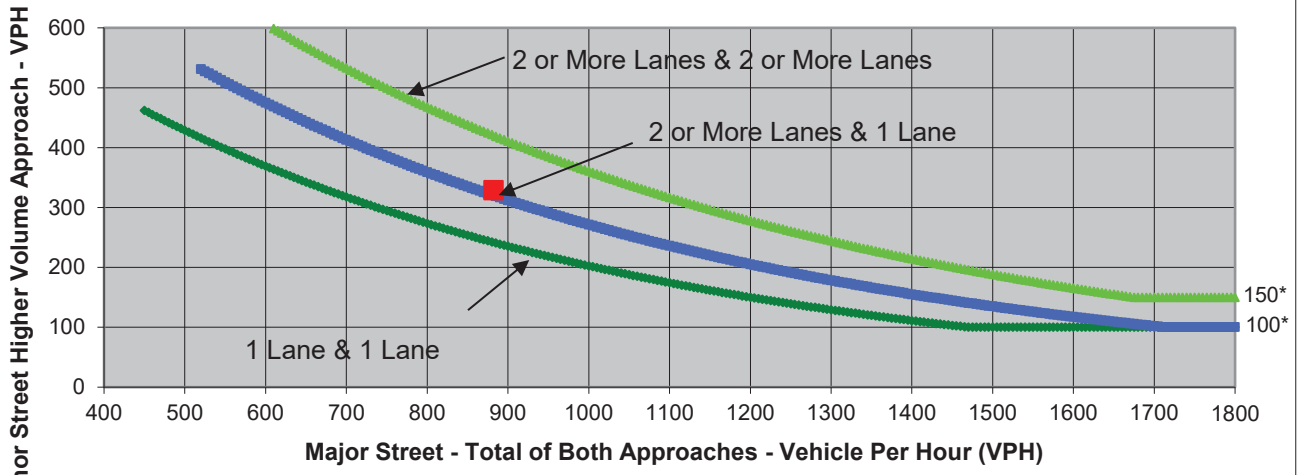
Project	Fairview at Northgate
Scenario	Weekday
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	37	118	22	192
Through	118	265	23	14
Right	298	46	52	123
Total	453	429	97	329

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**882**	**329**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	713	648	0	0
Right	109	0	0	20
Total	822	648	0	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**0**	**20**	**1,490**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

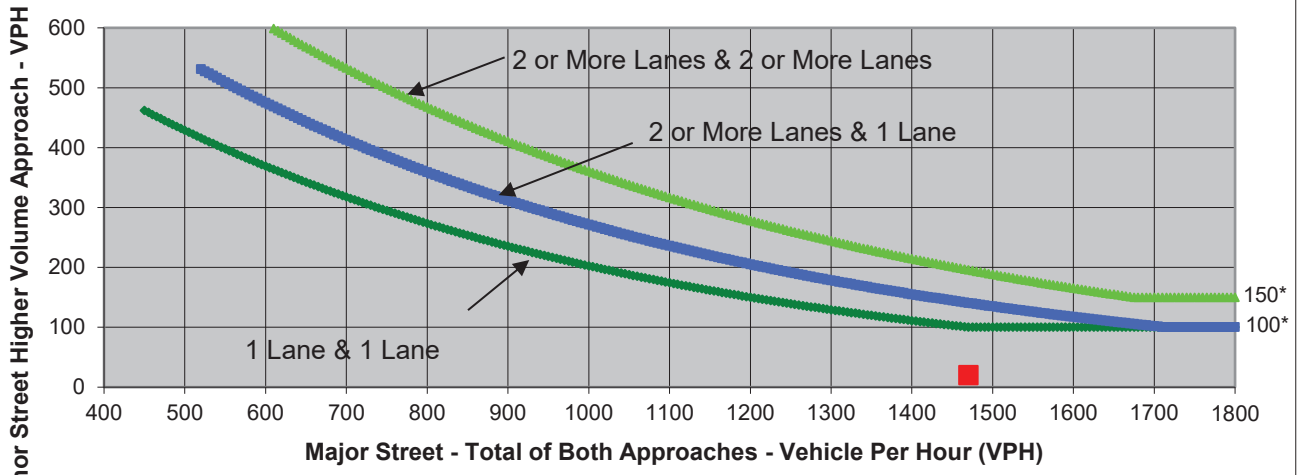
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	713	648	0	0
Right	109	0	0	20
Total	822	648	0	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,470**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Driveway	Project	Fairview at Northgate
Minor Street	Admiral Callaghan Ln	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	777	1,070	0	0
Right	170	0	0	40
Total	947	1,070	0	40

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	7.3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	947

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**1.9**	**1,070**	**2,057**
Limiting Value	**5**	**150**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

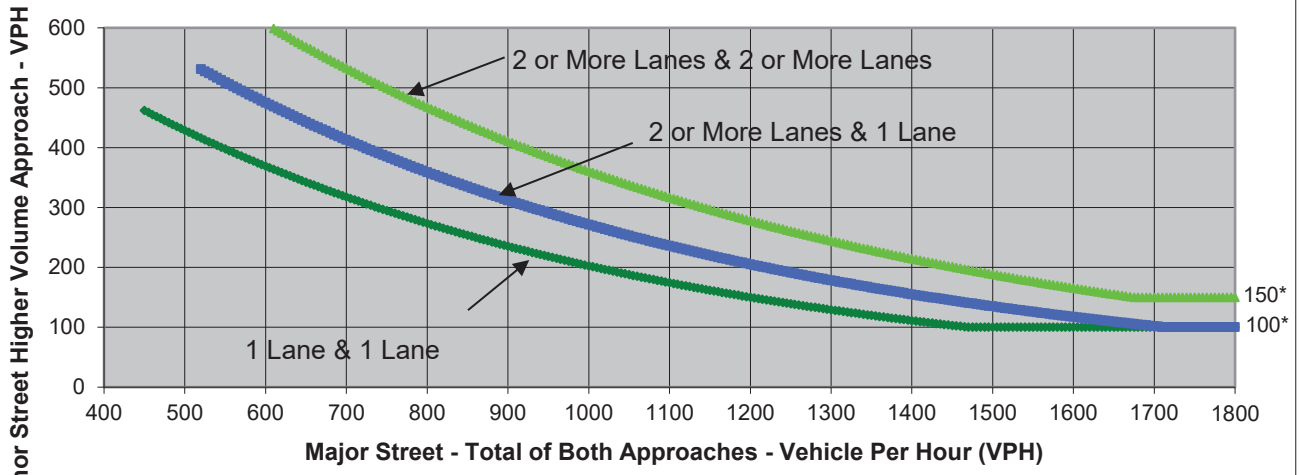
Major Street	Driveway	Project	Fairview at Northgate
Minor Street	Admiral Callaghan Ln	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	777	1,070	0	0
Right	170	0	0	40
Total	947	1,070	0	40

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Driveway	Admiral Callaghan Ln	
Number of Approach Lanes	**1**	**2**	**YES**
Traffic Volume (VPH) *	**40**	**1,070**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Weekday
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	14	30	70
Through	136	240	20	20
Right	180	40	80	44
Total	356	294	130	134

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	329
Approach with Worst Case Delay	WB
Total Vehicles on Approach	134

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Weekday	**12.2**	**134**	**914**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

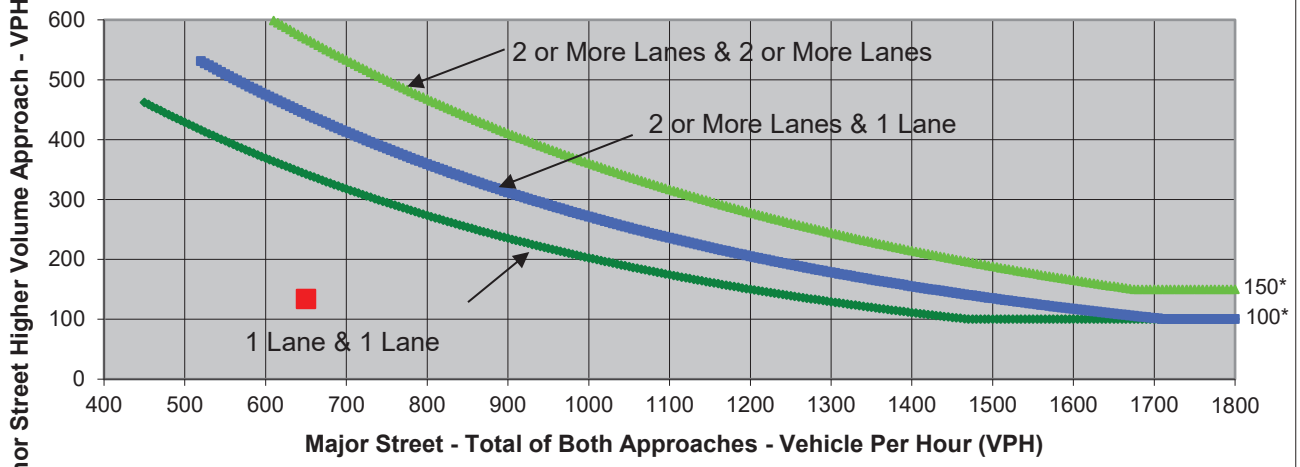
Project	Fairview at Northgate
Scenario	Weekday
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	14	30	70
Through	136	240	20	20
Right	180	40	80	44
Total	356	294	130	134

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**650**	**134**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	740	783	0	0
Right	50	0	0	20
Total	790	783	0	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.7
Approach with Worst Case Delay	WB
Total Vehicles on Approach	20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Sat	**0**	**20**	**1,593**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Target Driveway

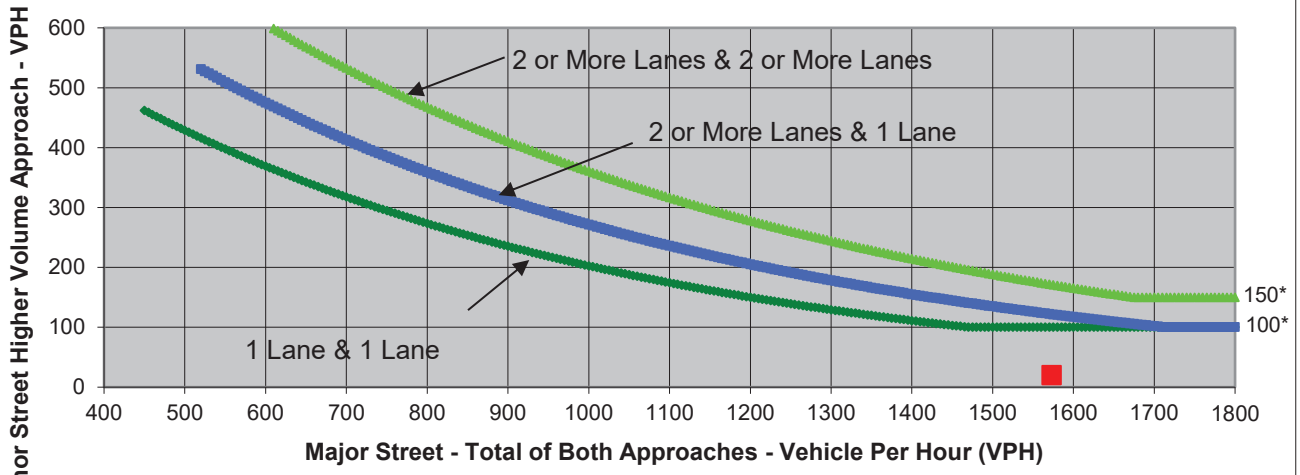
Project	Fairview at Northgate
Scenario	Sat
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	740	783	0	0
Right	50	0	0	20
Total	790	783	0	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,573**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Driveway	Project	Fairview at Northgate
Minor Street	Admiral Callaghan Ln	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,075	1,177	0	0
Right	200	0	0	42
Total	1,275	1,177	0	42

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	2
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	17.4
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,275

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Sat	**6.2**	**1,275**	**2,494**
Limiting Value	**5**	**150**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

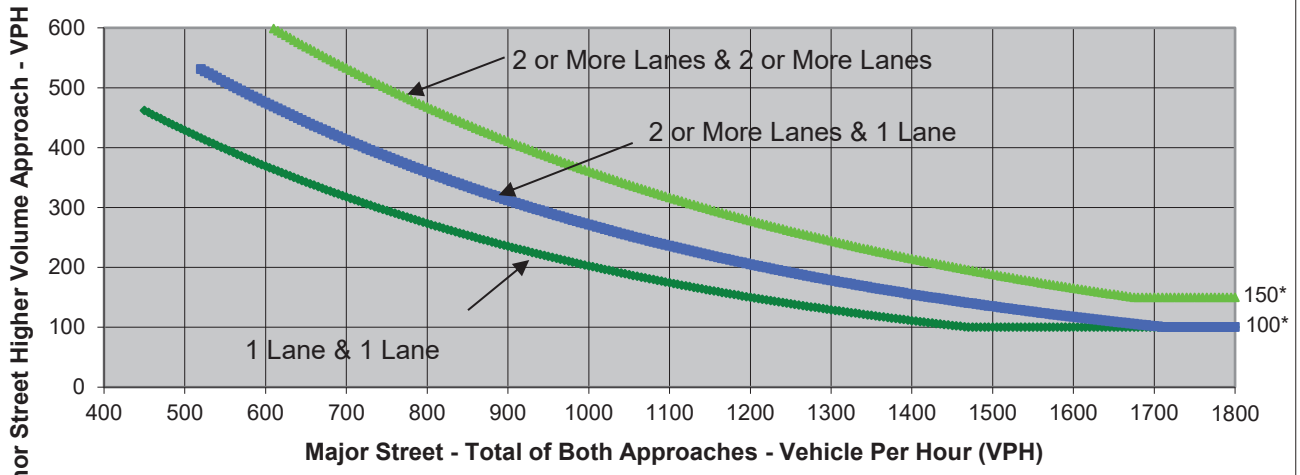
Major Street	Driveway	Project	Fairview at Northgate
Minor Street	Admiral Callaghan Ln	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,075	1,177	0	0
Right	200	0	0	42
Total	1,275	1,177	0	42

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Driveway	Admiral Callaghan Ln	
Number of Approach Lanes	**1**	**2**	**YES**
Traffic Volume (VPH) *	**42**	**1,275**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	70	124	28	202
Through	201	380	40	40
Right	356	78	100	156
Total	627	582	168	398

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	1468.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	398

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Sat	**162.3**	**398**	**1,775**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

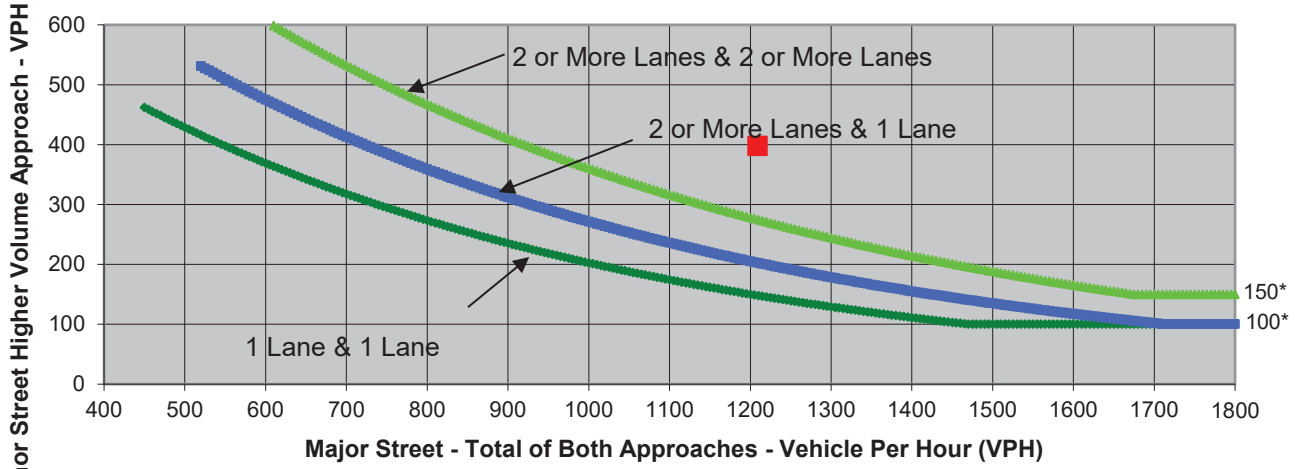
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	Sat
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	70	124	28	202
Through	201	380	40	40
Right	356	78	100	156
Total	627	582	168	398

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,209**	**398**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Project	Fairview at Northgate
Major Street	Admiral Callaghan Ln
Scenario	CMPP
Minor Street	Target Driveway
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	360	310	0	0
Right	30	0	0	10
Total	390	310	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	2.3
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0**	**10**	**710**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

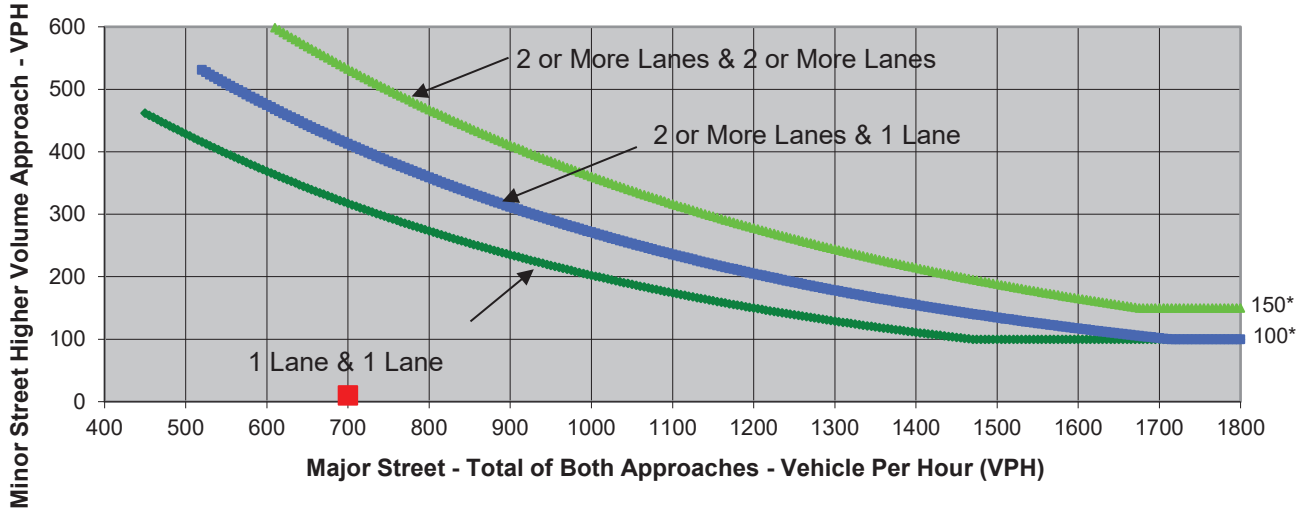
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	360	310	0	0
Right	30	0	0	10
Total	390	310	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**700**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Driveway

Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	702	657	0	0
Right	110	0	760	0
Total	812	657	760	0

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	1.1
Approach with Worst Case Delay	SB
Total Vehicles on Approach	657

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0.2**	**760**	**2,229**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

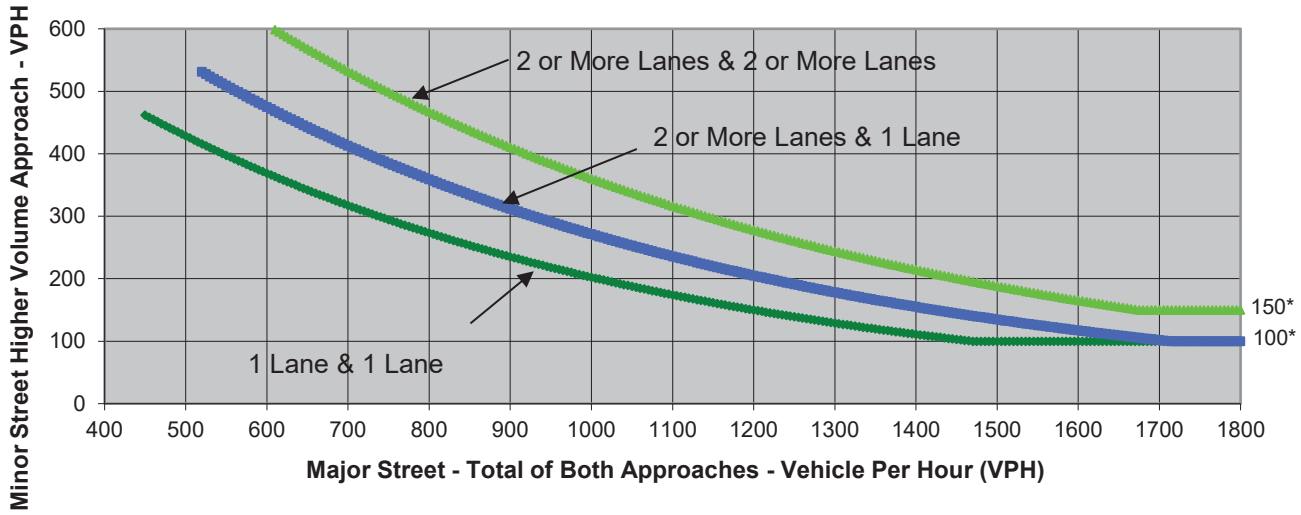
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	702	657	0	0
Right	110	0	760	0
Total	812	657	760	0

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,469**	**760**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	0	100
Through	95	50	0	0
Right	190	10	10	84
Total	295	150	10	184

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.6
Approach with Worst Case Delay	WB
Total Vehicles on Approach	184

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0.7**	**184**	**639**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Plaza Dr
Minor Street	Costco Driveway

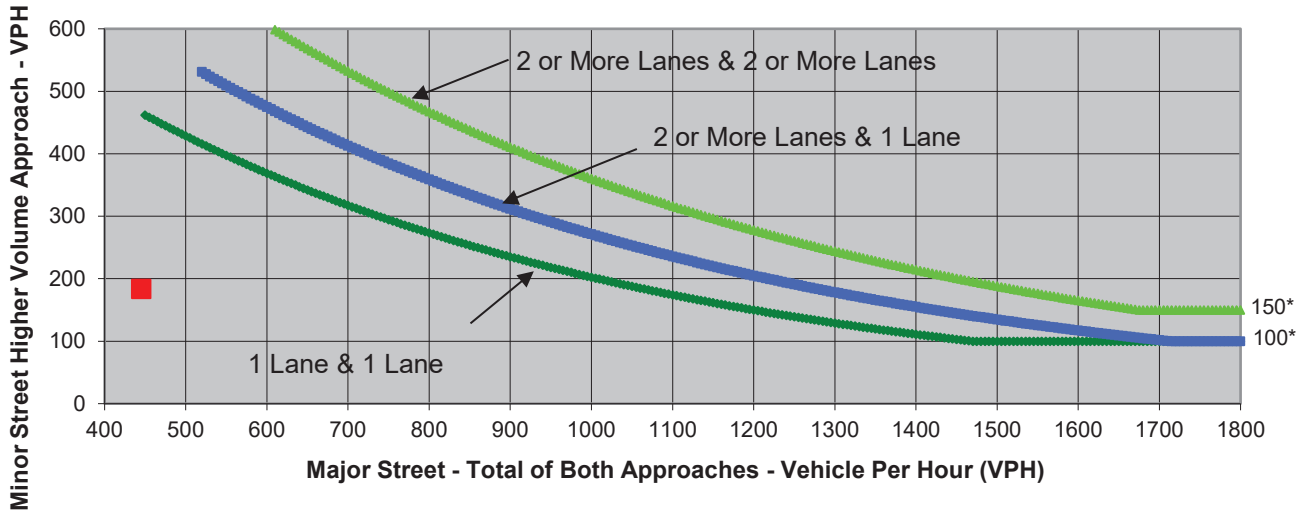
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	10	90	0	100
Through	95	50	0	0
Right	190	10	10	84
Total	295	150	10	184

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**445**	**184**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	CMPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	413	499
Right	33	0	73	0
Total	33	0	486	499

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.3
Approach with Worst Case Delay	NB
Total Vehicles on Approach	33

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0**	**33**	**1,018**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

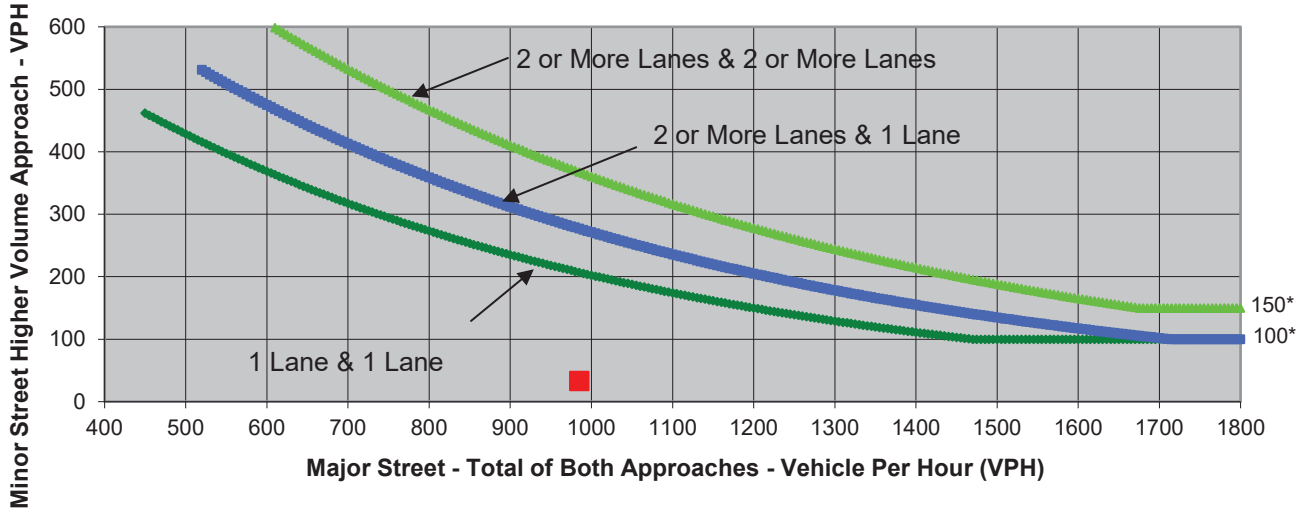
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	413	499
Right	33	0	73	0
Total	33	0	486	499

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**985**	**33**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway I

Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,581	1,456	0	0
Right	143	0	0	144
Total	1,724	1,473	0	144

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	5.2
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,473

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**2.1**	**144**	**3,341**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway I

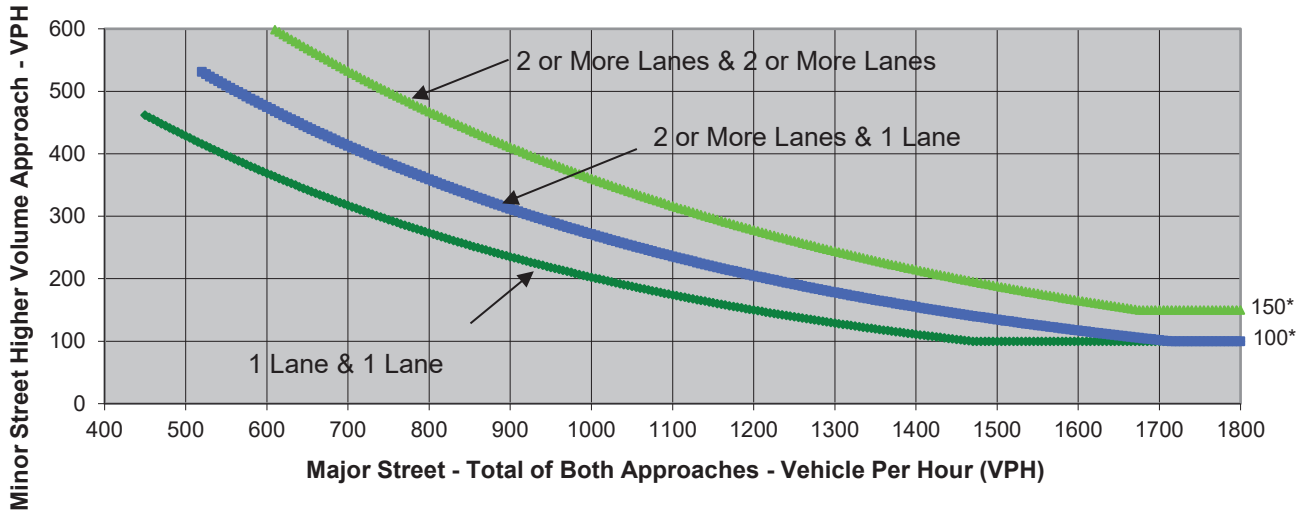
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,581	1,456	0	0
Right	143	0	0	144
Total	1,724	1,473	0	144

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,197**	**144**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,302	1,113	0	0
Right	260	0	0	144
Total	1,562	1,179	0	233

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.1
Approach with Worst Case Delay	WB
Total Vehicles on Approach	233

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0.8**	**233**	**2,974**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Admiral Callaghan Ln
Minor Street	Project Driveway III

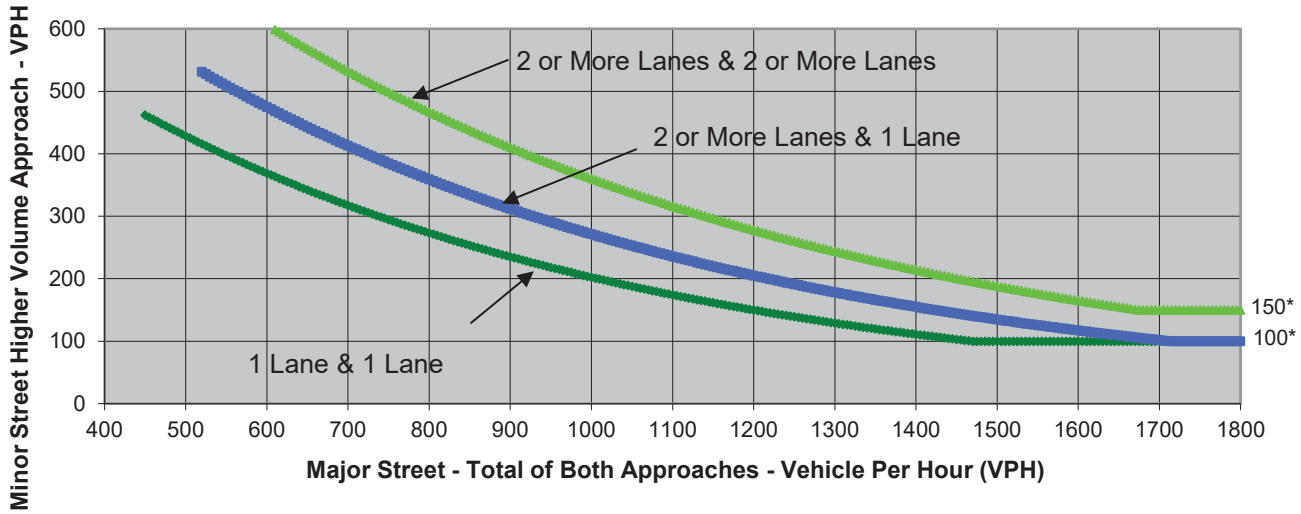
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,302	1,113	0	0
Right	260	0	0	144
Total	1,562	1,179	0	233

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,741**	**233**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	899	744	0	0
Right	50	0	0	10
Total	949	744	0	10

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	4.3
Approach with Worst Case Delay	WB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0**	**10**	**1,703**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

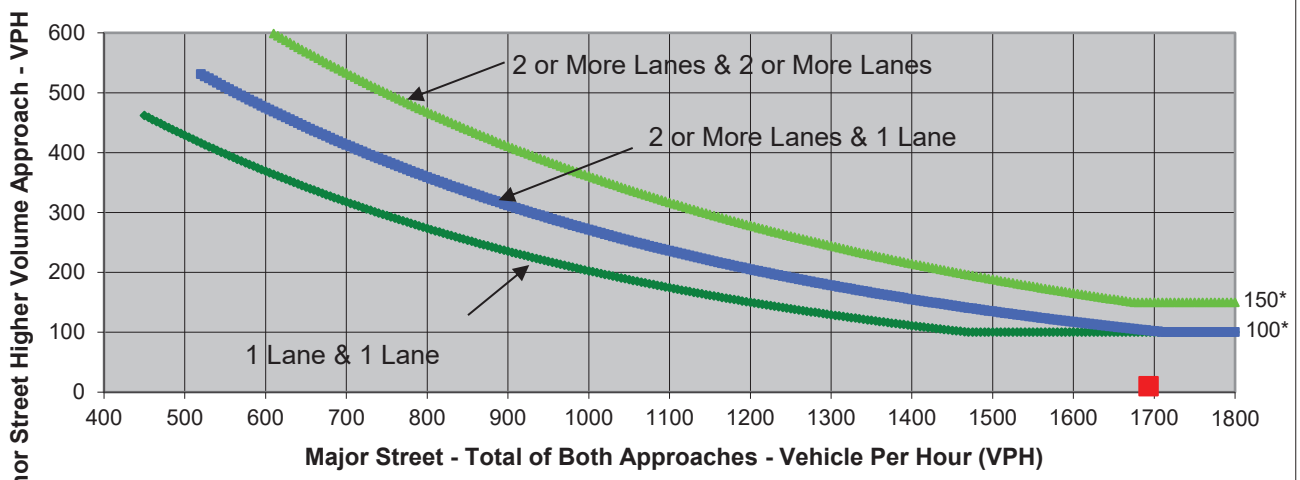
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	899	744	0	0
Right	50	0	0	10
Total	949	744	0	10

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,693**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,455	1,543	0	0
Right	150	0	0	0
Total	1,605	1,543	0	0

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	2

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	13.9
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,543

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**6**	**0**	**3,148**
Limiting Value	**4**	**100**	**Error-Check Input**
Condition Satisfied?	**Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

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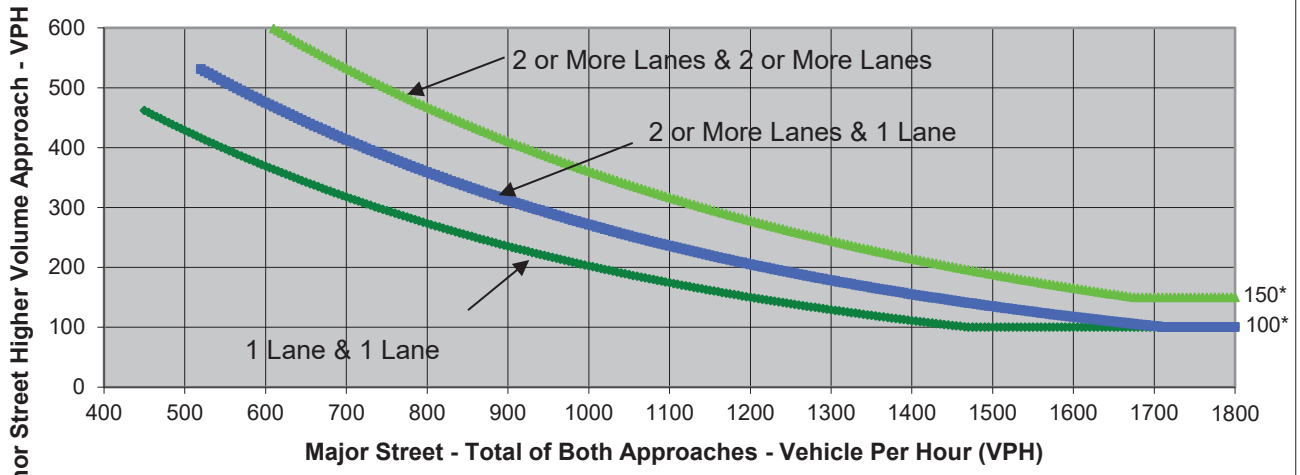
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,455	1,543	0	0
Right	150	0	0	0
Total	1,605	1,543	0	0

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**3,148**	**0**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	50	82	30	137
Through	145	251	17	20
Right	201	60	60	83
Total	396	393	107	240

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	32.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	240

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**2.2**	**240**	**1,136**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

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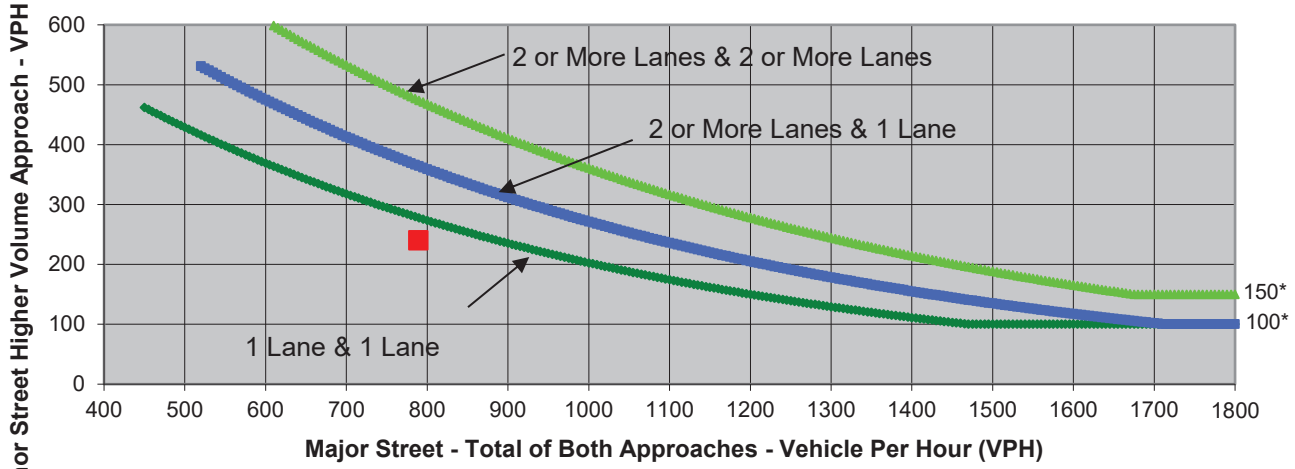
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	50	82	30	137
Through	145	251	17	20
Right	201	60	60	83
Total	396	393	107	240

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**789**	**240**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	443	493
Right	9	0	33	0
Total	9	0	476	493

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.2
Approach with Worst Case Delay	NB
Total Vehicles on Approach	9

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0**	**9**	**978**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

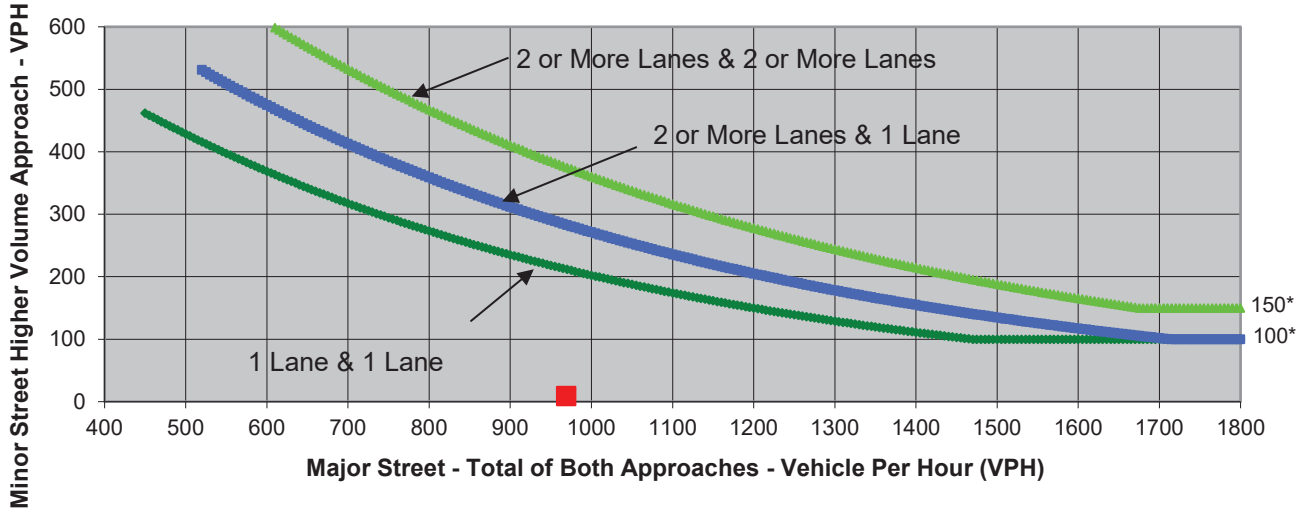
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	443	493
Right	9	0	33	0
Total	9	0	476	493

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**969**	**9**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	0
Through	1,471	1,393	0	0
Right	125	0	0	125
Total	1,596	1,407	0	125

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	52.1
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,407

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**20.4**	**125**	**3,128**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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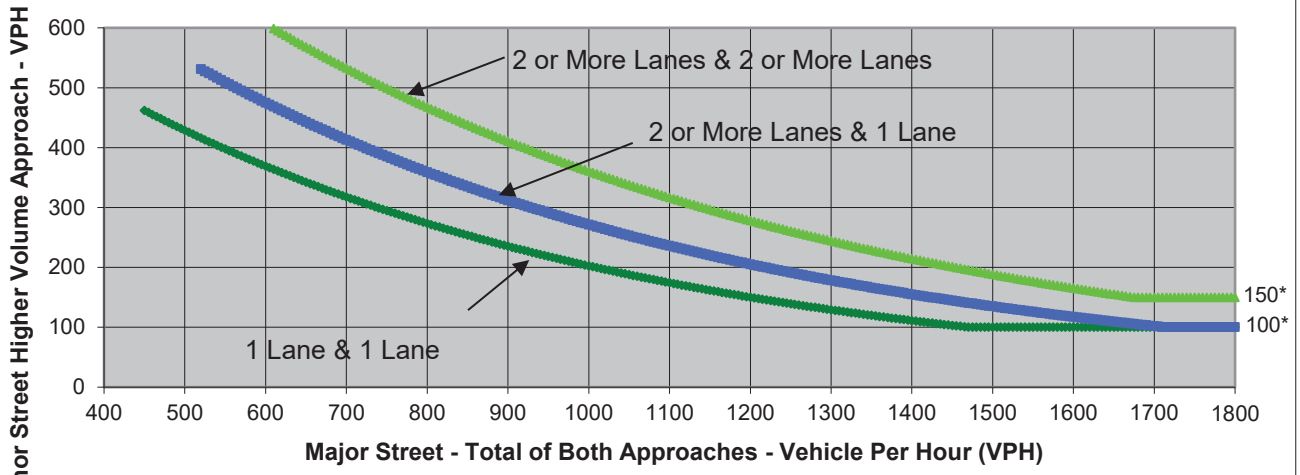
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	14	0	0
Through	1,471	1,393	0	0
Right	125	0	0	125
Total	1,596	1,407	0	125

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,003**	**125**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	57	0	77
Through	1,229	1,094	0	0
Right	226	0	0	125
Total	1,455	1,151	0	202

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	72.4
Approach with Worst Case Delay	WB
Total Vehicles on Approach	202

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**4.1**	**202**	**2,808**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

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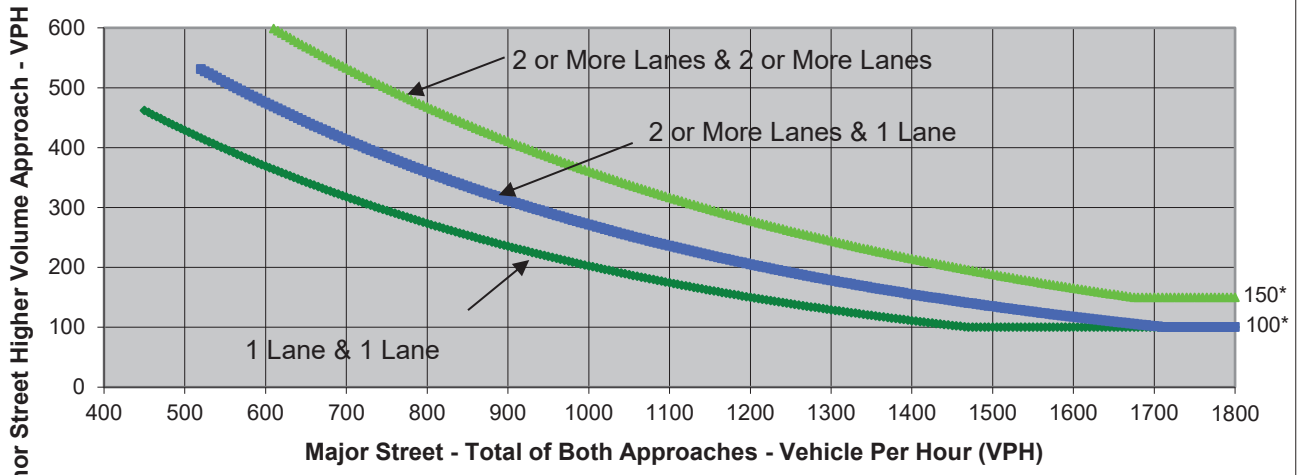
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	57	0	77
Through	1,229	1,094	0	0
Right	226	0	0	125
Total	1,455	1,151	0	202

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,606**	**202**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,080	830	0	0
Right	30	0	0	20
Total	1,110	830	0	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	6.2
Approach with Worst Case Delay	WB
Total Vehicles on Approach	20

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0**	**20**	**1,960**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

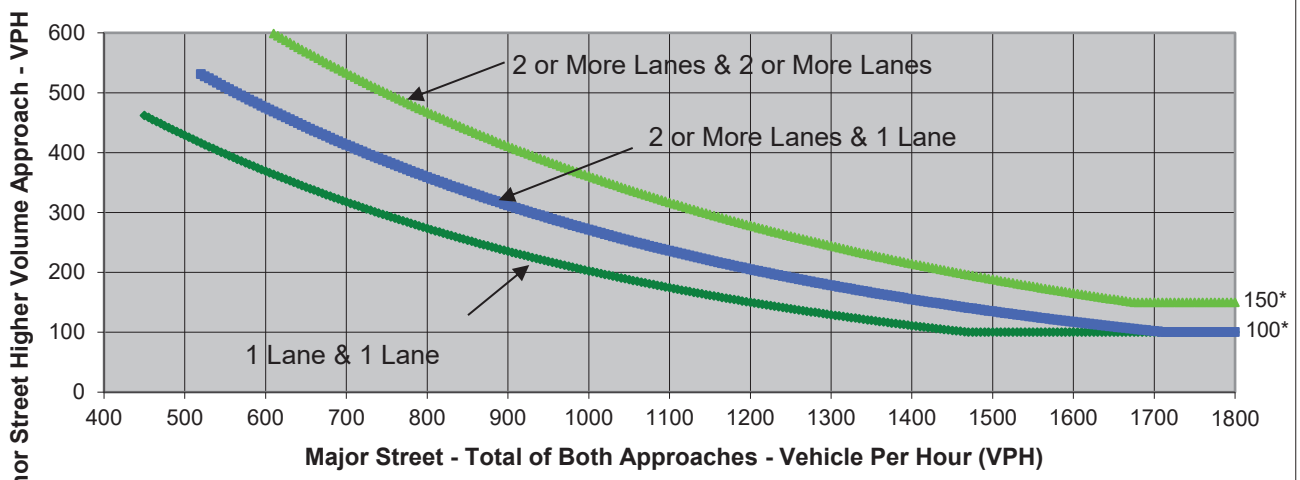
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,080	830	0	0
Right	30	0	0	20
Total	1,110	830	0	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,940**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,380	1,667	0	0
Right	170	0	0	40
Total	1,550	1,667	0	40

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	20
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,667

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**9.3**	**40**	**3,257**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

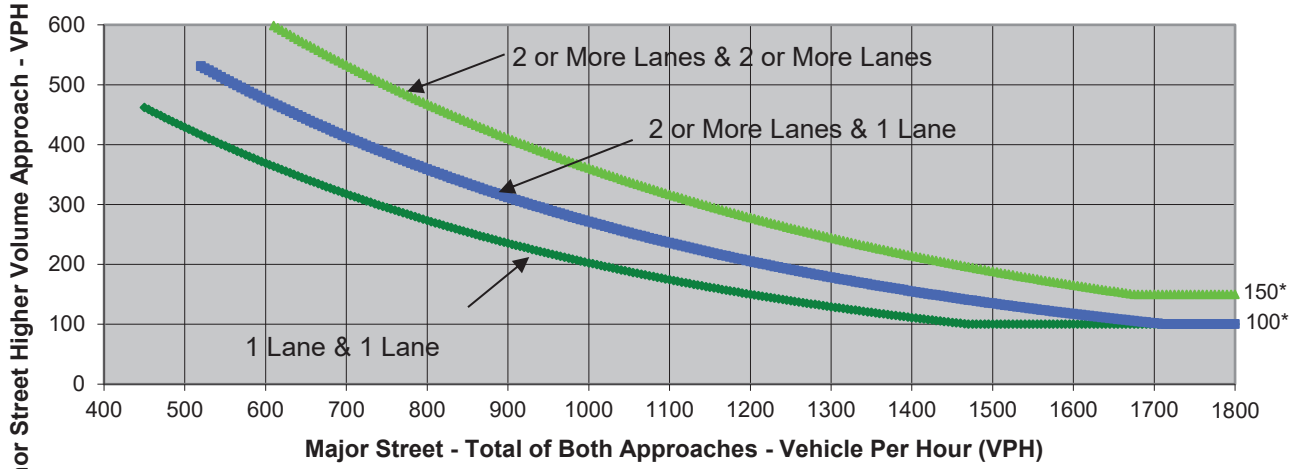
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,380	1,667	0	0
Right	170	0	0	40
Total	1,550	1,667	0	40

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**3,217**	**40**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	51	30	130
Through	192	294	11	20
Right	176	40	80	69
Total	408	385	121	219

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	28.2
Approach with Worst Case Delay	WB
Total Vehicles on Approach	219

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**1.7**	**219**	**1,133**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

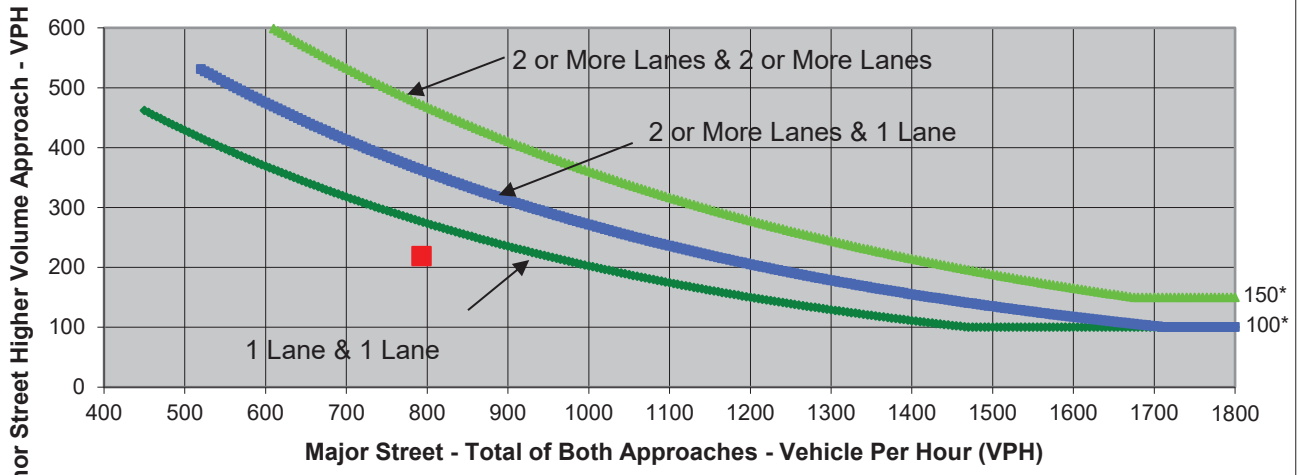
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	40	51	30	130
Through	192	294	11	20
Right	176	40	80	69
Total	408	385	121	219

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**793**	**219**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	438	506
Right	10	0	38	0
Total	10	0	476	506

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	3.4
Approach with Worst Case Delay	NB
Total Vehicles on Approach	10

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**0**	**10**	**992**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

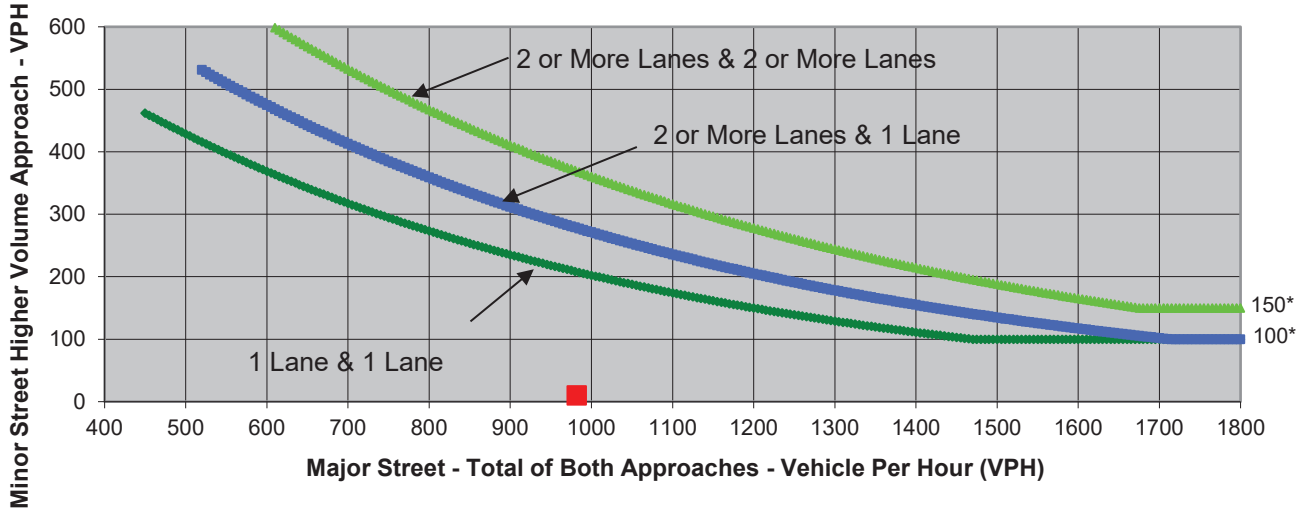
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	438	506
Right	10	0	38	0
Total	10	0	476	506

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**982**	**10**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,581	1,456	0	0
Right	143	0	0	144
Total	1,724	1,473	0	144

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	80.3
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,473

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**32.9**	**144**	**3,341**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

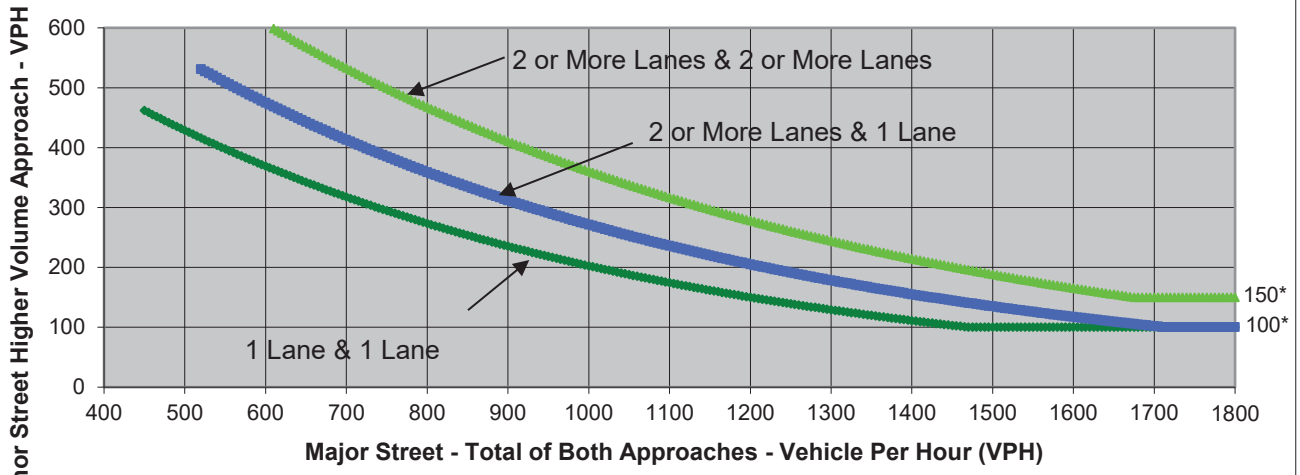
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,581	1,456	0	0
Right	143	0	0	144
Total	1,724	1,473	0	144

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,197**	**144**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,302	1,113	0	0
Right	260	0	0	144
Total	1,562	1,179	0	233

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	254.8
Approach with Worst Case Delay	SB
Total Vehicles on Approach	1,179

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**83.4**	**233**	**2,974**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

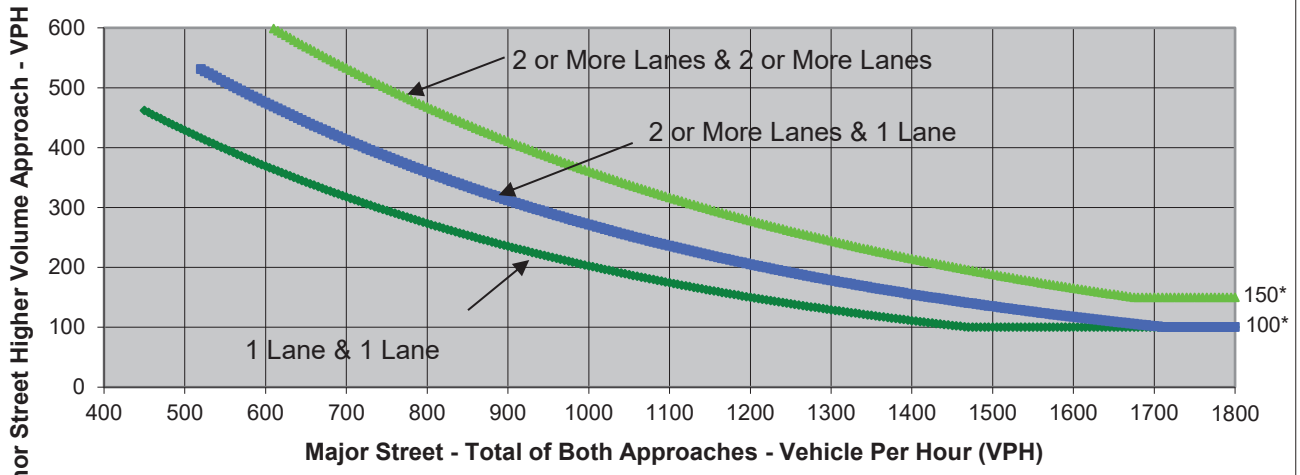
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	0	89
Through	1,302	1,113	0	0
Right	260	0	0	144
Total	1,562	1,179	0	233

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**2,741**	**233**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,164	926	0	0
Right	50	0	0	20
Total	1,214	926	0	20

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	192
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,214

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**64.7**	**20**	**2,160**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

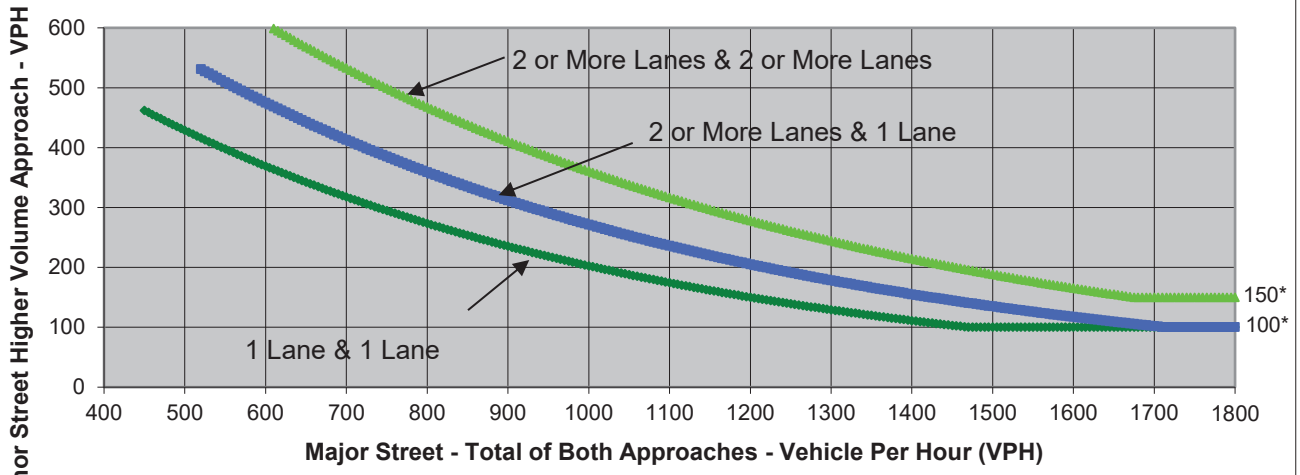
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Target Driveway	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,164	926	0	0
Right	50	0	0	20
Total	1,214	926	0	20

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Target Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**2,140**	**20**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,919	1,767	0	0
Right	190	0	0	0
Total	2,109	1,767	0	0

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	2

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	130.6
Approach with Worst Case Delay	NB
Total Vehicles on Approach	2,109

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**76.5**	**0**	**3,876**
Limiting Value	**4**	**100**	**Error-Check Input**
Condition Satisfied?	**Met**	**Not Met**	**Not Met**
Warrant Met	**NO**		

FEHR PEERS

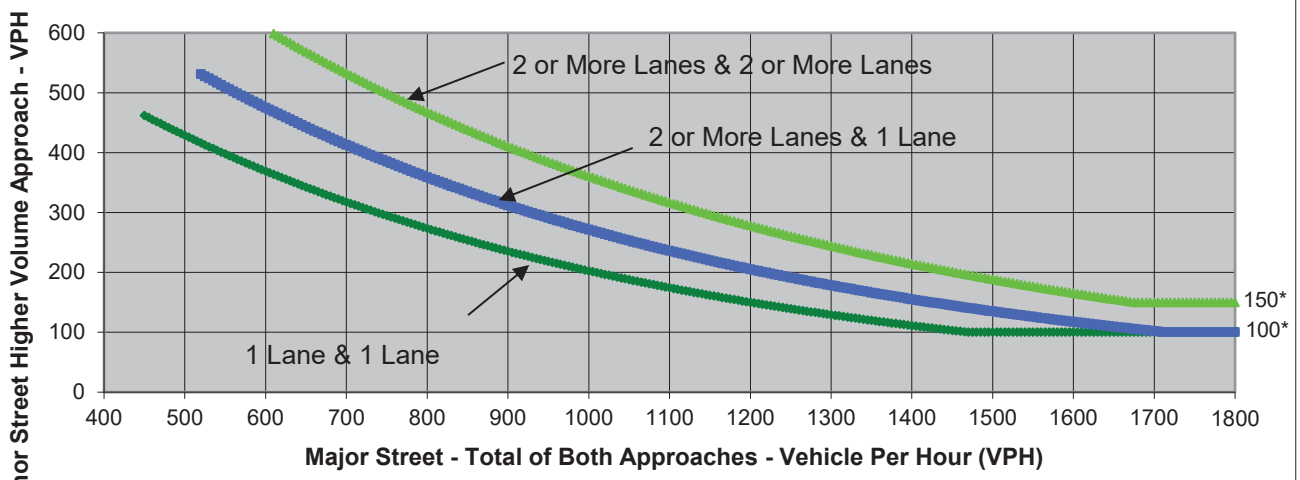
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Driveway	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	1,919	1,767	0	0
Right	190	0	0	0
Total	2,109	1,767	0	0

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Driveway	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**3,876**	**0**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	70	88	30	135
Through	238	340	27	26
Right	248	80	100	103
Total	556	508	157	264

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	166.3
Approach with Worst Case Delay	WB
Total Vehicles on Approach	264

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**12.2**	**264**	**1,485**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

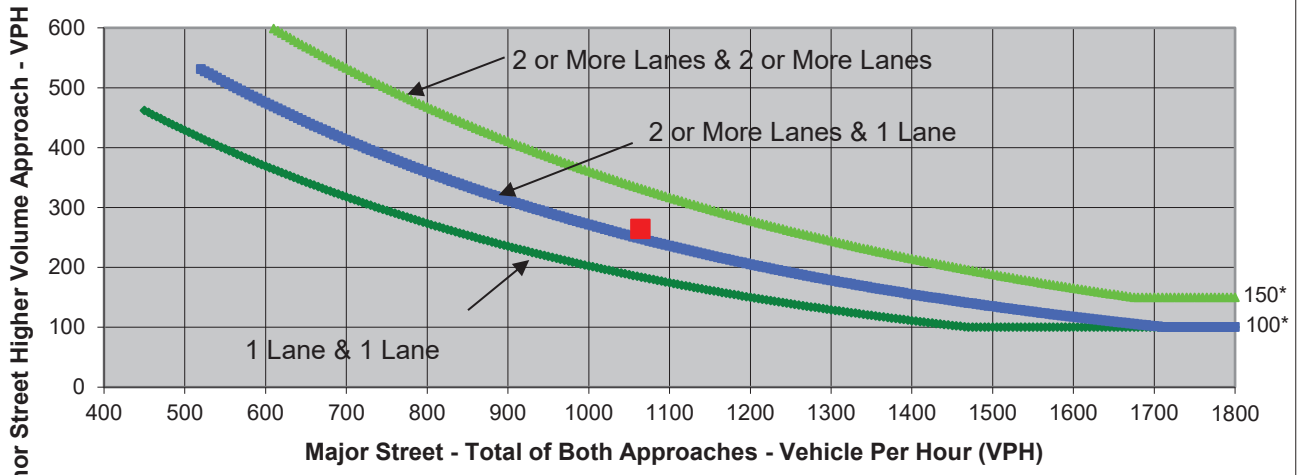
Major Street	Plaza Dr	Project	Fairview at Northgate
Minor Street	Costco Driveway	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	70	88	30	135
Through	238	340	27	26
Right	248	80	100	103
Total	556	508	157	264

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Plaza Dr	Costco Driveway	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**1,064**	**264**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Turner Pkwy	Project	Fairview at Northgate
Minor Street	Residential Driveway II	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	547	613
Right	12	0	30	0
Total	12	0	577	613

Major Street Direction

	North/South
X	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	44.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	613

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**7.6**	**12**	**1,202**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Not Met**	**Met**
Warrant Met	**NO**		

FEHR PEERS

Major Street	Turner Pkwy
Minor Street	Residential Driveway II

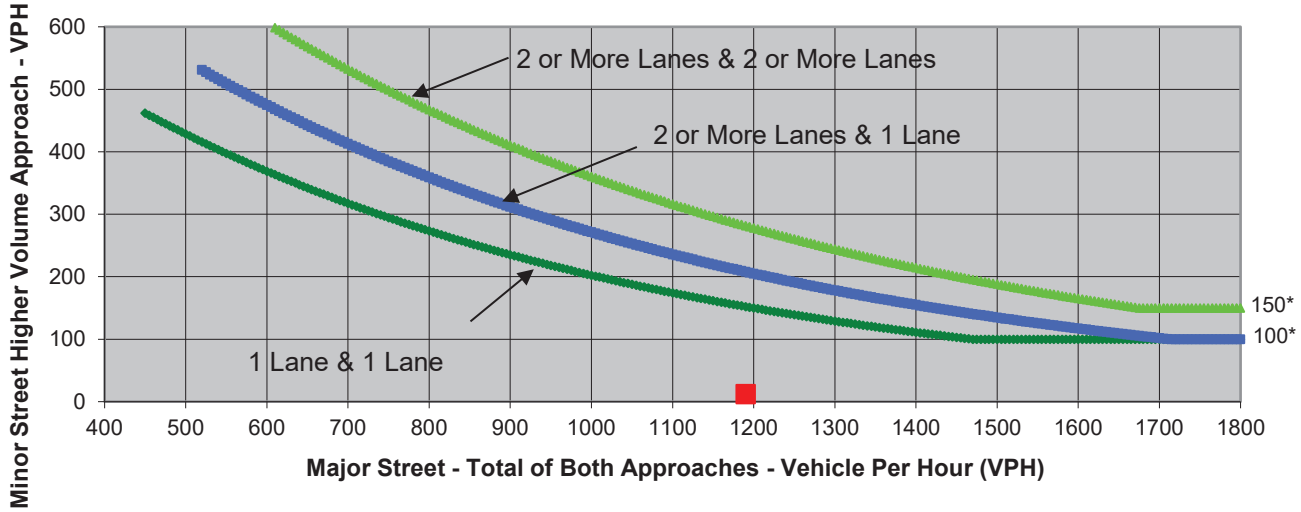
Project	Fairview at Northgate
Scenario	CMPP
Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	547	613
Right	12	0	30	0
Total	12	0	577	613

Major Street Direction

	North/South
X	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Turner Pkwy	Residential Driveway II	
Number of Approach Lanes	**2**	**1**	**NO**
Traffic Volume (VPH) *	**1,190**	**12**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,782	1,718	0	0
Right	151	0	0	156
Total	1,933	1,735	0	156

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	153.4
Approach with Worst Case Delay	WB
Total Vehicles on Approach	156

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**6.6**	**156**	**3,824**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

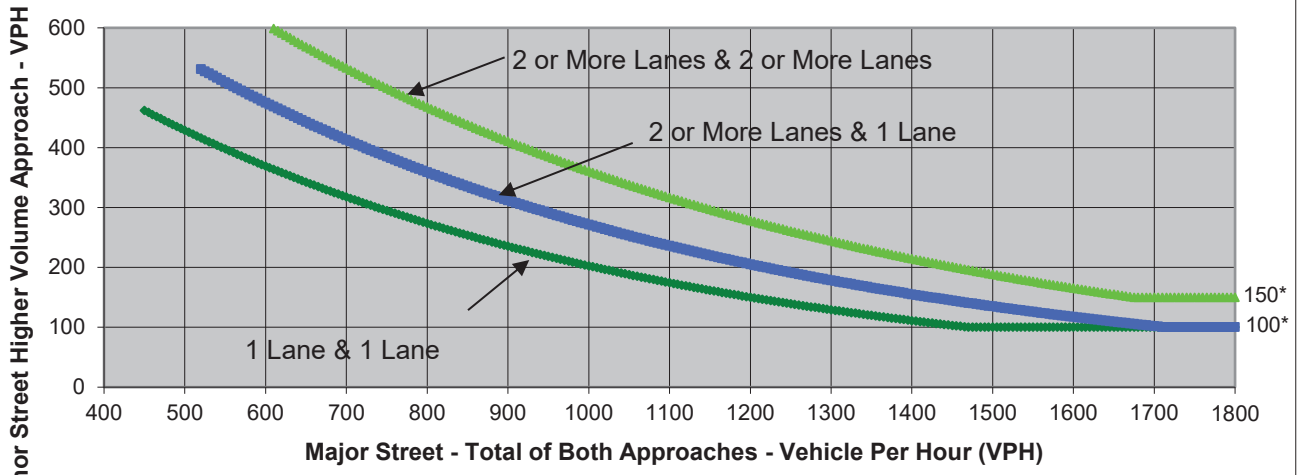
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway I	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	17	0	0
Through	1,782	1,718	0	0
Right	151	0	0	156
Total	1,933	1,735	0	156

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway I	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,668**	**156**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	69	0	96
Through	1,501	1,341	0	0
Right	273	0	0	156
Total	1,774	1,410	0	252

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	3

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	229.2
Approach with Worst Case Delay	NB
Total Vehicles on Approach	1,774

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
CMPP	**112.9**	**252**	**3,436**
Limiting Value	**4**	**100**	**650**
Condition Satisfied?	**Met**	**Met**	**Met**
Warrant Met	**YES**		

FEHR PEERS

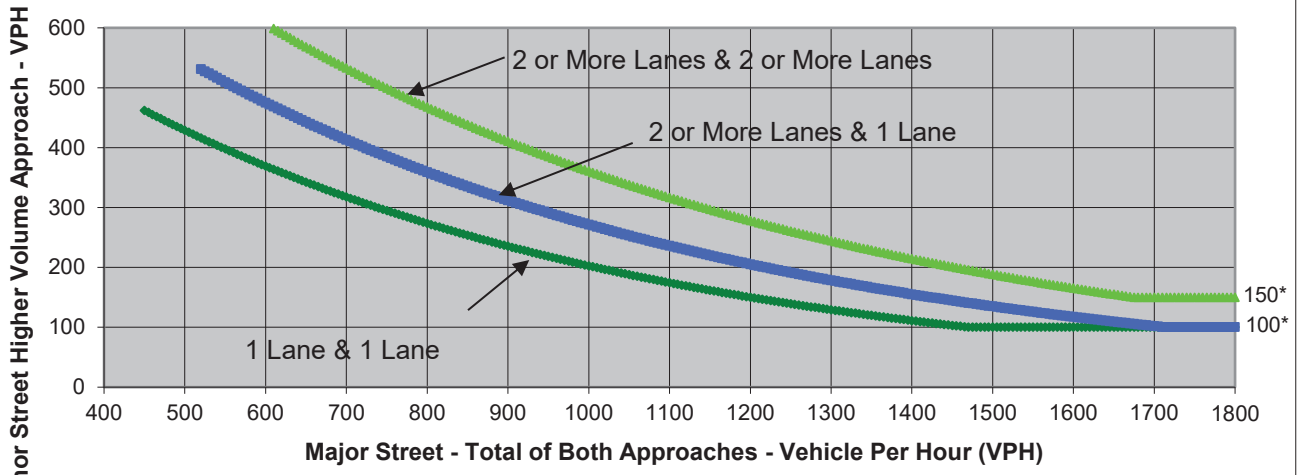
Major Street	Admiral Callaghan Ln	Project	Fairview at Northgate
Minor Street	Project Driveway III	Scenario	CMPP
		Peak Hour	SA

Turn Movement Volumes

	NB	SB	EB	WB
Left	0	69	0	96
Through	1,501	1,341	0	0
Right	273	0	0	156
Total	1,774	1,410	0	252

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Admiral Callaghan Ln	Project Driveway III	
Number of Approach Lanes	**2**	**1**	**YES**
Traffic Volume (VPH) *	**3,184**	**252**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Appendix E:
Queue Results



Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	5	100	8	125	17	0%	0%
	Through/Right	350	75	8	125	15	175	33	0%	0%
SB	Left Turn	300	50	4	75	7	100	18	0%	0%
	Through	625	50	7	100	21	150	75	0%	0%
WB	Left Turn	200	100	9	150	21	150	34	0%	0%
	Right Turn	200	50	3	75	6	75	9	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	350	25	10	25	60	50	113	0%	1%
WB	Right Turn	375	25	3	50	5	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	425	50	7	100	22	150	68	0%	0%
	Through/Right	425	100	11	200	17	225	39	0%	0%
SB	Left Turn	375	50	5	100	9	125	27	0%	0%
	Through	375	75	19	150	75	225	108	1%	1%
WB	U/Left Turns	300	175	34	300	58	300	32	8%	0%
	Shared	775	225	75	450	213	575	258	11%	4%
	Right Turn	775	25	20	125	130	250	312	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	250	36	350	18	325	10	0%	39%
	Through/Right	225	275	26	350	23	325	6	0%	60%
SB	Left Turn	200	75	15	200	30	200	0	0%	0%
	Through	375	475	3	500	7	500	0	10%	99%
WB	Left Turn	1,425	75	32	175	149	250	283	35%	0%
	Right Turn	50	50	2	75	6	75	7	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	19	100	77	175	113	0%	2%
NB	Left Turn	150	150	15	200	4	175	0	52%	0%
	Through	300	200	42	400	28	325	7	3%	19%
	Through/Right	300	175	43	400	48	375	23	0%	2%
SB	Through	200	25	0	25	4	25	11	0%	0%
	Through/Right	200	75	26	200	86	250	93	0%	7%
WB	Right Turn	175	25	10	50	27	75	39	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	22	225	37	225	0	0%	0%
	Through	1,925	575	213	1,300	549	1,625	548	42%	5%
	Right Turn	250	100	17	200	39	250	29	1%	0%
SB	Left Turn	150	100	13	175	14	150	4	15%	0%
	Through	1,350	150	61	400	244	625	408	3%	0%
	Right Turn	150	50	4	100	15	150	32	0%	0%
SW	Left Turns	125	125	2	150	3	150	0	76%	0%
	Right Turns	1,275	1,025	172	1,475	133	1,325	15	26%	44%
WB	Left Turn	350	325	32	400	38	375	0	50%	0%
	Through	850	650	146	1,000	142	850	7	1%	14%
	Through/Right	850	475	95	925	134	875	26	0%	1%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	300	13	350	20	325	0	50%	0%
	Through	850	625	149	1,025	103	900	298	3%	21%
NB	Through	1,350	475	179	975	394	1,125	367	22%	8%
	Right Turn	475	100	55	325	195	375	197	0%	0%
SB	Left Turn	300	75	7	125	15	150	21	0%	0%
	Right Turn	300	250	31	400	43	400	28	0%	13%
WB	Through	75	150	7	175	19	175	14	0%	68%
	Through/Right	75	150	2	150	3	175	6	0%	70%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	4	50	13	75	41	0%	0%
	Through	225	75	8	150	16	200	37	0%	0%
	Through/Right	225	100	13	200	21	250	47	0%	0%
NB	Left Turn	125	100	10	150	7	125	2	29%	0%
	Through/Right	1,125	200	157	600	386	750	380	0%	5%
SB	Shared	275	25	5	50	11	50	17	0%	0%
WB	Left Turn	150	50	12	100	31	150	30	0%	0%
	Through	575	200	103	450	221	500	185	21%	12%
	Through/Right	575	200	103	475	225	525	178	0%	15%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	350	50	4	100	13	125	35	0%	0%
	Through/Right	350	75	5	125	8	150	20	0%	0%
SB	Left Turn	280	50	3	75	5	100	14	0%	0%
	Through	650	75	2	100	7	125	16	0%	0%
WB	Left Turn	140	75	8	150	20	175	30	0%	0%
	Right Turn	140	50	4	75	5	75	13	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	3	50	5	50	7	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	275	75	11	150	28	200	46	0%	0%
	Through/Right	275	150	14	225	26	250	40	0%	0%
SB	Left Turn	375	50	5	75	7	100	16	0%	0%
	Through	375	100	13	200	24	225	45	0%	0%
WB	Left Turn	300	150	8	250	26	275	38	0%	0%
	Shared	275	50	6	100	31	150	100	0%	0%
	Right Turn	275	25	3	50	6	50	14	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	100	11	175	23	225	46	0%	1%
	Through/Right	225	125	10	175	26	225	51	0%	1%
SB	Left Turn	200	50	3	75	11	100	26	0%	0%
	Through	350	125	7	175	13	200	23	0%	0%
WB	Left Turn	1,425	75	8	125	20	150	33	31%	0%
	Right Turn	50	50	5	75	11	100	5	7%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	1	25	9	25	27	0%	0%
NB	Left Turn	150	100	13	200	20	200	1	14%	0%
	Through	300	50	24	200	75	300	53	0%	1%
	Through/Right	300	25	17	150	67	300	96	0%	0%
SB	Through	200	25	1	25	7	25	20	0%	0%
	Through/Right	200	25	3	75	7	100	19	0%	0%
WB	Right Turn	175	25	3	50	6	50	14	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr, All Intervals** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	75	14	150	42	250	39	0%	0%
	Through	1,925	225	21	375	151	525	493	7%	0%
	Right Turn	250	100	10	175	31	225	56	0%	0%
SB	Left Turn	150	100	10	150	17	175	22	3%	0%
	Through	1,350	100	10	150	33	200	62	2%	0%
	Right Turn	150	50	5	75	12	100	35	0%	0%
SW	Left Turns	125	100	9	175	11	175	0	9%	0%
	Right Turns	1,275	175	19	300	42	400	105	26%	0%
WB	Left Turn	350	150	14	250	51	325	101	0%	0%
	Through	850	250	18	400	38	450	67	2%	0%
	Through/Right	850	275	20	425	33	475	58	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	200	14	300	29	325	29	2%	0%
	Through	850	100	30	225	111	350	204	0%	0%
NB	Through	1,350	125	9	200	10	225	24	0%	0%
	Right Turn	475	25	4	50	14	75	30	0%	0%
SB	Left Turn	300	100	10	200	24	250	44	0%	0%
	Right Turn	300	200	15	300	26	375	45	0%	1%
WB	Through	325	200	6	275	10	325	17	0%	0%
	Through/Right	325	200	9	300	13	350	18	0%	1%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	3	50	5	50	11	0%	0%
	Through	225	75	7	150	18	175	36	0%	0%
	Through/Right	225	100	7	175	20	225	40	0%	0%
NB	Left Turn	125	100	7	150	12	150	13	5%	0%
	Through/Right	1,125	50	6	100	31	175	92	0%	0%
SB	Shared	275	25	3	50	6	50	1	0%	0%
WB	Left Turn	150	50	6	75	10	100	16	0%	0%
	Through	575	50	6	100	11	125	23	0%	0%
	Through/Right	575	50	5	100	10	125	22	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	350	75	7	125	15	150	35	0%	0%
	Through/Right	350	100	10	150	16	200	41	0%	0%
SB	Left Turn	280	50	4	100	10	100	14	0%	0%
	Through	650	75	8	125	12	150	24	0%	0%
WB	Left Turn	140	100	7	175	11	200	10	0%	0%
	Right Turn	140	50	3	75	9	100	14	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	4	50	6	50	11	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	275	100	12	200	22	250	38	0%	0%
	Through/Right	275	175	15	250	23	275	24	0%	0%
SB	Left Turn	375	75	7	125	17	125	30	0%	0%
	Through	375	100	9	200	18	225	38	0%	0%
WB	Left Turn	300	150	11	250	22	325	26	1%	0%
	Shared	275	50	7	100	38	175	129	0%	0%
	Right Turn	275	25	5	50	20	75	65	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	125	12	175	31	225	50	0%	1%
	Through/Right	225	125	10	200	24	250	45	0%	1%
SB	Left Turn	200	50	2	75	7	100	9	0%	0%
	Through	350	125	5	175	11	225	34	0%	0%
WB	Left Turn	1,425	75	20	150	68	225	110	44%	0%
	Right Turn	50	50	6	100	11	100	0	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	3	25	22	50	45	0%	0%
NB	Left Turn	150	125	14	200	20	200	2	17%	0%
	Through	300	50	34	200	82	300	29	0%	2%
	Through/Right	300	50	27	150	87	275	96	0%	0%
SB	Through	200	25	1	25	7	25	18	0%	0%
	Through/Right	200	25	3	75	9	125	31	0%	0%
WB	Right Turn	175	25	4	50	8	75	13	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr, All Intervals** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	11	225	20	275	1	0%	0%
	Through	1,925	250	20	375	54	425	92	13%	0%
	Right Turn	250	175	13	300	19	300	2	3%	0%
SB	Left Turn	150	150	11	225	10	200	0	29%	0%
	Through	1,350	225	44	450	90	525	123	24%	0%
	Right Turn	150	75	12	175	24	200	2	0%	0%
SW	Left Turns	125	150	5	200	7	175	0	23%	0%
	Right Turns	1,275	200	15	350	38	400	70	24%	0%
WB	Left Turn	350	175	23	300	52	400	20	0%	0%
	Through	850	325	22	450	26	475	39	4%	0%
	Through/Right	850	350	20	475	25	525	35	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	175	11	250	21	325	36	1%	0%
	Through	850	100	11	150	55	225	152	0%	0%
NB	Through	1,350	150	9	225	19	250	26	0%	0%
	Right Turn	475	50	4	75	9	125	23	0%	0%
SB	Left Turn	300	125	8	225	25	275	41	0%	0%
	Right Turn	300	225	15	350	28	400	35	0%	2%
WB	Through	325	175	7	275	11	325	17	0%	0%
	Through/Right	325	200	12	300	16	350	19	0%	1%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	3	50	7	75	15	0%	0%
	Through	225	125	7	200	14	225	7	1%	0%
	Through/Right	225	150	8	225	11	275	23	0%	1%
NB	Left Turn	125	125	5	175	7	175	1	12%	0%
	Through/Right	1,125	75	10	150	28	250	33	0%	0%
SB	Shared	275	25	3	50	5	50	11	0%	0%
WB	Left Turn	150	50	5	75	7	100	12	0%	0%
	Through	575	50	4	100	7	125	15	0%	0%
	Through/Right	575	50	6	100	10	125	19	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Left Turn	140	125	8	200	9	200	12	0%	1%
	Right Turn	140	50	4	75	14	100	33	0%	0%
NB	Through	350	100	7	175	11	225	21	0%	0%
	Through/Right	350	125	12	225	19	275	36	0%	0%
SB	Left Turn	280	75	10	125	15	150	24	0%	0%
	Through	650	75	5	125	17	175	62	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	3	50	4	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	300	250	22	350	23	350	7	8%	0%
	Shared	275	75	34	250	119	425	151	0%	0%
	Right Turn	275	25	10	75	74	150	196	0%	0%
NB	Through	275	275	27	525	53	675	60	0%	0%
	Through/Right	275	225	16	300	17	300	10	0%	2%
SB	Left Turn	375	75	7	125	16	150	30	0%	0%
	Through	375	150	10	225	18	275	38	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Left Turn	1,425	75	7	125	31	200	75	39%	0%
	Right Turn	50	50	3	100	6	100	0	11%	0%
NB	Through	225	150	11	225	24	250	29	0%	2%
	Through/Right	225	150	14	250	24	275	31	0%	3%
SB	Left Turn	200	50	3	75	5	100	12	0%	0%
	Through	350	150	9	250	25	300	64	0%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Right Turn	175	50	43	75	76	75	65	5%	0%
NB	Left Turn	150	100	36	200	69	200	79	15%	1%
	Through	300	75	35	225	68	325	55	2%	2%
	Through/Right	300	50	39	175	108	275	110	0%	0%
SB	Through/Right	200	25	14	75	62	100	89	0%	0%
EB	Right Turn	300	25	0	25	0	25	0	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr, All Intervals** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	17	225	31	275	1	0%	0%
	Through	1,925	300	30	475	68	550	107	23%	0%
	Right Turn	250	100	12	175	25	250	36	0%	0%
WB	Left Turn	325	225	34	350	54	375	42	2%	0%
	Through	850	250	22	400	47	500	54	2%	0%
	Through/Right	850	275	13	425	29	475	62	0%	0%
SB	Left Turn	150	75	6	125	11	150	24	3%	0%
	Through	1,350	100	8	150	16	200	39	7%	0%
	Right Turn	150	75	5	125	16	150	23	1%	0%
SW	Left Turns	125	100	4	150	4	125	0	45%	0%
	Right Turns	1,275	225	42	400	89	475	94	51%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	275	19	375	21	350	1	12%	0%
	Through	850	175	93	500	232	650	213	0%	1%
WB	Through	325	200	39	275	53	300	56	0%	0%
	Through/Right	325	225	17	325	21	350	27	0%	1%
NB	Through	1,350	150	14	225	19	250	24	0%	0%
	Right Turn	475	25	3	50	8	75	14	0%	0%
SB	Left Turn	300	100	15	200	35	250	39	0%	0%
	Right Turn	300	225	21	350	39	400	28	0%	1%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	50	5	75	15	100	45	0%	0%
	Through	225	75	8	150	15	200	30	0%	0%
	Through/Right	225	125	10	200	20	225	36	0%	0%
WB	Left Turn	150	50	5	100	10	125	13	0%	0%
	Through	575	75	4	100	10	125	17	0%	0%
	Through/Right	575	75	6	125	14	150	38	0%	0%
NB	Left Turn	125	100	5	150	9	175	7	6%	0%
	Through/Right	1,125	50	4	100	19	175	55	0%	0%
SB	Shared	275	25	3	50	6	50	7	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	25	4	50	10	75	20	0%	0%
	Through/Right	350	50	2	75	7	100	21	0%	0%
SB	Left Turn	300	50	3	75	4	75	10	0%	0%
	Through	625	25	3	50	6	75	19	0%	0%
WB	Left Turn	200	50	3	75	6	100	13	0%	0%
	Right Turn	200	25	3	50	5	75	13	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	3	50	6	50	1	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	425	25	3	75	8	75	21	0%	0%
	Through/Right	425	75	7	100	11	125	22	0%	0%
SB	Left Turn	375	50	4	75	6	75	18	0%	0%
	Through	375	25	5	75	9	75	21	0%	0%
WB	U/Left Turns	300	25	2	50	6	75	12	0%	0%
	Shared	675	50	3	75	6	75	15	0%	0%
	Right Turn	675	25	2	25	6	50	9	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	50	3	100	6	100	16	0%	0%
	Through/Right	225	75	6	125	11	125	13	0%	0%
SB	Left Turn	200	50	2	75	4	75	14	0%	0%
	Through	375	75	4	100	11	150	27	0%	0%
WB	Left Turn	1,425	50	4	75	9	100	15	15%	0%
	Right Turn	50	25	3	75	9	75	15	3%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Right Turn	300	25	4	25	25	75	63	0%	0%
NB	Left Turn	150	50	5	100	10	125	19	0%	0%
	Through/Right	300	25	1	25	13	50	39	0%	0%
SB	Through	200	25	0	25	3	25	9	0%	0%
	Through/Right	200	25	3	25	10	50	27	0%	0%
WB	Right Turn	175	25	3	25	7	50	8	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Diagonal	225	150	23	350	21	275	0	0%	0%
	Left/Through	1,925	1,525	96	2,425	80	1,950	13	92%	50%
	Through	1,925	1,475	110	2,525	59	1,975	6	0%	44%
	Right Turn	250	75	15	175	34	250	38	1%	0%
SB	Left Turn	150	125	9	175	15	200	6	9%	0%
	Through	1,350	125	13	225	43	300	81	9%	0%
	Right Turn	150	75	9	150	21	200	12	1%	0%
SW	Left Turns	125	125	7	200	10	175	0	16%	0%
	Right Turns	1,275	275	36	425	65	500	99	42%	0%
WB	Left Turn	350	125	10	200	41	250	82	0%	0%
	Through	825	275	14	400	30	450	65	2%	0%
	Through/Right	825	300	13	425	27	450	55	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	125	13	200	19	225	36	0%	0%
	Through	825	50	8	100	21	125	51	0%	0%
NB	Left/Through	375	100	6	175	11	200	18	0%	0%
	Through	1,350	125	7	200	13	225	23	0%	0%
	Right Turn	475	25	3	25	10	50	17	0%	0%
SB	Left Turn	300	75	6	125	16	150	22	0%	0%
	Right Turn	300	225	20	350	29	375	36	0%	2%
WB	Through	75	150	4	175	7	175	16	0%	41%
	Through/Right	75	125	3	175	6	175	11	0%	36%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	4	50	7	50	11	0%	0%
	Through	225	50	7	125	17	150	28	0%	0%
	Through/Right	225	100	7	150	18	175	29	0%	0%
NB	Left Turn	125	75	3	125	6	150	14	2%	0%
	Through/Right	1,125	50	4	100	20	150	54	0%	0%
SB	Shared	275	25	2	25	6	50	1	0%	0%
WB	Left Turn	150	75	4	100	10	150	25	1%	0%
	Through	575	75	3	100	13	150	32	0%	0%
	Through/Right	575	75	7	125	15	150	27	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	5	100	8	125	17	0%	0%
	Through/Right	350	75	8	125	15	175	33	0%	0%
SB	Left Turn	280	50	4	75	7	100	18	0%	0%
	Through	650	50	7	100	21	150	75	0%	0%
WB	Left Turn	140	100	9	150	21	150	34	0%	0%
	Right Turn	140	50	3	75	6	75	9	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	425	25	10	25	60	50	113	0%	1%
WB	Right Turn	375	25	3	50	5	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	50	7	100	22	150	68	0%	0%
	Through/Right	275	100	11	200	17	225	39	0%	0%
SB	Left Turn	375	50	5	100	9	125	27	0%	0%
	Through	375	75	19	150	75	225	108	1%	1%
WB	U/Left Turns	300	175	34	300	58	300	32	8%	0%
	Shared	275	225	75	450	213	575	258	11%	4%
	Right Turn	275	25	20	125	130	250	312	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	250	36	350	18	325	10	0%	39%
	Through/Right	225	275	26	350	23	325	6	0%	60%
SB	Left Turn	200	75	15	200	30	200	0	0%	0%
	Through	350	475	3	500	7	500	0	10%	99%
WB	Left Turn	1,425	75	32	175	149	250	283	35%	0%
	Right Turn	50	50	2	75	6	75	7	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	19	100	77	175	113	0%	2%
NB	Left Turn	150	150	15	200	4	175	0	52%	0%
	Through	300	200	42	400	28	325	7	3%	19%
	Through/Right	300	175	43	400	48	375	23	0%	2%
SB	Through	200	25	0	25	4	25	11	0%	0%
	Through/Right	200	75	26	200	86	250	93	0%	7%
WB	Right Turn	175	25	10	50	27	75	39	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	22	225	37	225	0	0%	0%
	Through	1,925	575	213	1,300	549	1,625	548	42%	5%
	Right Turn	250	100	17	200	39	250	29	1%	0%
SB	Left Turn	150	100	13	175	14	150	4	15%	0%
	Through	1,350	150	61	400	244	625	408	3%	0%
	Right Turn	150	50	4	100	15	150	32	0%	0%
SW	Left Turns	125	125	2	150	3	150	0	76%	0%
	Right Turns	1,275	1,025	172	1,475	133	1,325	15	26%	44%
WB	Left Turn	350	325	32	400	38	375	0	50%	0%
	Through	850	650	146	1,000	142	850	7	1%	14%
	Through/Right	850	475	95	925	134	875	26	0%	1%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	300	13	350	20	325	0	50%	0%
	Through	850	625	149	1,025	103	900	298	3%	21%
NB	Through	1,350	475	179	975	394	1,125	367	22%	8%
	Right Turn	475	100	55	325	195	375	197	0%	0%
SB	Left Turn	300	75	7	125	15	150	21	0%	0%
	Right Turn	300	250	31	400	43	400	28	0%	13%
WB	Through	325	150	7	175	19	175	14	0%	68%
	Through/Right	325	150	2	150	3	175	6	0%	70%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	4	50	13	75	41	0%	0%
	Through	225	75	8	150	16	200	37	0%	0%
	Through/Right	225	100	13	200	21	250	47	0%	0%
NB	Left Turn	125	100	10	150	7	125	2	29%	0%
	Through/Right	1,125	200	157	600	386	750	380	0%	5%
SB	Shared	275	25	5	50	11	50	17	0%	0%
WB	Left Turn	150	50	12	100	31	150	30	0%	0%
	Through	575	200	103	450	221	500	185	21%	12%
	Through/Right	575	200	103	475	225	525	178	0%	15%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	7	100	11	125	19	0%	0%
	Through/Right	350	75	10	150	21	200	25	0%	0%
SB	Left Turn	280	50	5	100	13	125	35	0%	0%
	Through	650	75	10	125	48	200	156	1%	0%
WB	Left Turn	140	100	8	175	20	200	18	0%	1%
	Right Turn	140	50	2	75	7	100	17	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	425	25	13	50	72	75	121	0%	1%
WB	Right Turn	375	25	3	50	5	50	16	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	50	11	100	26	150	50	0%	0%
	Through/Right	275	75	17	150	40	225	55	0%	0%
SB	Left Turn	375	75	18	150	62	200	98	0%	0%
	Through	375	75	38	200	124	250	140	3%	3%
WB	U/Left Turns	300	275	67	375	61	325	49	41%	0%
	Shared	275	425	174	675	205	675	157	48%	19%
	Right Turn	275	75	46	225	179	375	252	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	200	57	350	36	325	15	0%	35%
	Through/Right	225	225	43	350	20	325	11	0%	48%
SB	Left Turn	200	100	14	250	27	250	0	0%	0%
	Through	350	475	3	500	5	500	0	14%	99%
WB	Left Turn	1,425	100	36	175	148	300	318	45%	0%
	Right Turn	50	50	6	100	10	100	2	12%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	50	27	150	83	225	76	0%	2%
NB	Left Turn	150	200	5	225	14	200	0	85%	0%
	Through	300	300	15	375	32	325	9	7%	56%
	Through/Right	300	150	60	375	65	375	25	0%	3%
SB	Through	200	25	0	25	0	25	7	0%	0%
	Through/Right	200	100	21	275	36	300	16	0%	12%
WB	Right Turn	175	50	36	125	67	125	61	0%	8%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	33	275	48	275	0	0%	0%
	Through	1,925	1,475	166	2,550	102	1,975	14	80%	54%
	Right Turn	250	150	40	300	39	300	0	5%	0%
SB	Left Turn	150	175	20	225	9	200	1	49%	0%
	Through	1,350	575	290	1,225	595	1,150	449	20%	23%
	Right Turn	150	75	8	175	31	200	2	1%	0%
SW	Left Turns	125	175	2	175	3	175	0	86%	0%
	Right Turns	1,275	1,000	139	1,550	130	1,325	16	17%	50%
WB	Left Turn	350	375	16	425	48	400	0	64%	0%
	Through	850	750	99	1,000	65	850	1	0%	16%
	Through/Right	850	475	67	900	69	875	35	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	325	9	375	35	350	0	54%	0%
	Through	850	800	60	1,125	139	900	347	1%	45%
NB	Through	1,350	925	233	1,600	268	1,400	15	56%	43%
	Right Turn	475	250	105	600	130	525	0	0%	0%
SB	Left Turn	300	100	10	150	18	175	27	0%	0%
	Right Turn	300	300	25	450	25	425	16	0%	20%
WB	Through	325	125	12	200	13	175	15	0%	48%
	Through/Right	325	150	3	175	6	175	0	0%	80%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	6	75	10	75	10	0%	0%
	Through	225	100	22	175	44	200	46	2%	2%
	Through/Right	225	125	19	200	45	225	57	0%	2%
NB	Left Turn	125	150	13	200	10	175	0	59%	0%
	Through/Right	1,125	600	248	1,325	342	1,150	18	0%	38%
SB	Shared	275	25	8	50	15	75	23	0%	0%
WB	Left Turn	150	50	5	125	18	175	43	2%	0%
	Through	575	325	118	700	163	625	17	13%	37%
	Through/Right	575	350	122	700	154	625	18	0%	42%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	7	125	18	175	40	0%	0%
	Through/Right	350	75	7	150	16	175	35	0%	0%
SB	Left Turn	280	75	6	125	8	150	20	0%	0%
	Through	650	75	6	125	12	150	28	0%	0%
WB	Left Turn	140	100	4	175	10	200	15	0%	0%
	Right Turn	140	50	4	75	9	100	12	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	425	25	2	25	13	25	27	0%	0%
WB	Right Turn	375	25	4	50	7	50	10	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	25	7	100	22	150	50	0%	0%
	Through/Right	275	50	9	150	24	200	55	0%	0%
SB	Left Turn	375	75	11	150	37	175	69	0%	0%
	Through	375	75	21	175	65	250	102	1%	1%
WB	U/Left Turns	300	325	34	375	27	350	0	67%	0%
	Shared	275	650	144	925	134	825	18	75%	58%
	Right Turn	275	150	81	525	223	675	198	0%	2%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **All-way Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	75	20	200	54	275	58	0%	4%
	Through/Right	225	100	19	250	42	300	34	0%	7%
SB	Left Turn	200	200	21	350	7	250	0	0%	0%
	Through	350	475	10	550	33	500	0	86%	93%
WB	Left Turn	1,425	775	276	1,325	391	1,225	318	97%	12%
	Right Turn	50	75	7	125	3	100	0	6%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	75	17	200	36	275	29	0%	0%
NB	Left Turn	150	175	6	200	6	200	6	100%	0%
	Through	300	300	2	325	10	325	13	0%	97%
	Through/Right	300	25	16	150	72	300	111	0%	1%
SB	Through	200	250	10	350	13	300	15	0%	33%
	Through/Right	200	275	9	350	23	325	0	0%	73%
WB	Right Turn	175	25	4	50	6	75	18	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	50	19	175	51	275	1	0%	0%
	Through	1,925	1,825	84	2,375	174	1,950	17	96%	85%
	Right Turn	250	25	10	125	31	225	56	0%	0%
SB	Left Turn	150	150	10	200	10	175	8	82%	0%
	Through	1,350	825	181	1,725	109	1,375	5	0%	44%
	Right Turn	150	25	6	50	16	100	34	0%	0%
SW	Left Turns	125	100	12	125	5	125	1	98%	0%
	Right Turns	1,275	1,250	43	1,450	120	1,300	22	5%	90%
WB	Left Turn	350	375	1	375	3	375	0	75%	0%
	Through	850	850	3	875	18	850	2	0%	30%
	Through/Right	850	400	102	900	161	875	17	0%	1%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	5	100	8	125	17	0%	0%
	Through/Right	350	75	8	125	15	175	33	0%	0%
SB	Left Turn	300	50	4	75	7	100	18	0%	0%
	Through	625	50	7	100	21	150	75	0%	0%
WB	Left Turn	200	100	9	150	21	150	34	0%	0%
	Right Turn	200	50	3	75	6	75	9	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	350	25	10	25	60	50	113	0%	1%
WB	Right Turn	375	25	3	50	5	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	425	50	7	100	22	150	68	0%	0%
	Through/Right	425	100	11	200	17	225	39	0%	0%
SB	Left Turn	375	50	5	100	9	125	27	0%	0%
	Through	375	75	19	150	75	225	108	1%	1%
WB	U/Left Turns	300	175	34	300	58	300	32	8%	0%
	Shared	775	225	75	450	213	575	258	11%	4%
	Right Turn	775	25	20	125	130	250	312	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	250	36	350	18	325	10	0%	39%
	Through/Right	225	275	26	350	23	325	6	0%	60%
SB	Left Turn	200	75	15	200	30	200	0	0%	0%
	Through	375	475	3	500	7	500	0	10%	99%
WB	Left Turn	1,425	75	32	175	149	250	283	35%	0%
	Right Turn	50	50	2	75	6	75	7	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	19	100	77	175	113	0%	2%
NB	Left Turn	150	150	15	200	4	175	0	52%	0%
	Through	300	200	42	400	28	325	7	3%	19%
	Through/Right	300	175	43	400	48	375	23	0%	2%
SB	Through	200	25	0	25	4	25	11	0%	0%
	Through/Right	200	75	26	200	86	250	93	0%	7%
WB	Right Turn	175	25	10	50	27	75	39	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	22	225	37	225	0	0%	0%
	Through	1,925	575	213	1,300	549	1,625	548	42%	5%
	Right Turn	250	100	17	200	39	250	29	1%	0%
SB	Left Turn	150	100	13	175	14	150	4	15%	0%
	Through	1,350	150	61	400	244	625	408	3%	0%
	Right Turn	150	50	4	100	15	150	32	0%	0%
SW	Left Turns	125	125	2	150	3	150	0	76%	0%
	Right Turns	1,275	1,025	172	1,475	133	1,325	15	26%	44%
WB	Left Turn	350	325	32	400	38	375	0	50%	0%
	Through	850	650	146	1,000	142	850	7	1%	14%
	Through/Right	850	475	95	925	134	875	26	0%	1%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	300	13	350	20	325	0	50%	0%
	Through	850	625	149	1,025	103	900	298	3%	21%
NB	Through	1,350	475	179	975	394	1,125	367	22%	8%
	Right Turn	475	100	55	325	195	375	197	0%	0%
SB	Left Turn	300	75	7	125	15	150	21	0%	0%
	Right Turn	300	250	31	400	43	400	28	0%	13%
WB	Through	75	150	7	175	19	175	14	0%	68%
	Through/Right	75	150	2	150	3	175	6	0%	70%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	4	50	13	75	41	0%	0%
	Through	225	75	8	150	16	200	37	0%	0%
	Through/Right	225	100	13	200	21	250	47	0%	0%
NB	Left Turn	125	100	10	150	7	125	2	29%	0%
	Through/Right	1,125	200	157	600	386	750	380	0%	5%
SB	Shared	275	25	5	50	11	50	17	0%	0%
WB	Left Turn	150	50	12	100	31	150	30	0%	0%
	Through	575	200	103	450	221	500	185	21%	12%
	Through/Right	575	200	103	475	225	525	178	0%	15%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	350	11	350	9	350	1	82%	0%
	Through	850	875	9	900	19	900	32	0%	89%
NB	Through	1,350	1,275	61	1,625	112	1,400	17	88%	84%
	Right Turn	475	125	37	475	84	525	0	0%	0%
SB	Left Turn	300	225	20	375	24	375	29	1%	4%
	Right Turn	300	400	8	450	19	450	12	0%	50%
WB	Through	325	50	14	125	32	150	15	0%	16%
	Through/Right	325	150	7	150	6	150	11	0%	98%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	75	50	125	77	125	64	10%	2%
	Through	225	75	39	175	89	200	77	10%	4%
	Through/Right	225	75	20	175	45	200	37	0%	0%
NB	Left Turn	125	150	4	175	15	175	6	94%	0%
	Through/Right	1,125	975	57	1,475	68	1,125	16	0%	79%
SB	Shared	275	100	35	200	68	200	60	0%	5%
WB	Left Turn	150	25	6	50	28	100	58	0%	0%
	Through	575	525	36	750	49	600	28	27%	75%
	Through/Right	575	525	39	725	68	600	33	0%	68%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	75	7	125	15	150	35	0%	0%
	Through/Right	350	100	10	150	16	200	41	0%	0%
SB	Left Turn	280	50	4	100	10	100	14	0%	0%
	Through	650	75	8	125	12	150	24	0%	0%
WB	Left Turn	140	100	7	175	11	200	10	0%	0%
	Right Turn	140	50	3	75	9	100	14	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Right Turn	375	25	4	50	6	50	11	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	100	12	200	22	250	38	0%	0%
	Through/Right	275	175	15	250	23	275	24	0%	0%
SB	Left Turn	375	75	7	125	17	125	30	0%	0%
	Through	375	100	9	200	18	225	38	0%	0%
WB	Left Turn	300	150	11	250	22	325	26	1%	0%
	Shared	275	50	7	100	38	175	129	0%	0%
	Right Turn	275	25	5	50	20	75	65	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	125	12	175	31	225	50	0%	1%
	Through/Right	225	125	10	200	24	250	45	0%	1%
SB	Left Turn	200	50	2	75	7	100	9	0%	0%
	Through	350	125	5	175	11	225	34	0%	0%
WB	Left Turn	1,425	75	20	150	68	225	110	44%	0%
	Right Turn	50	50	6	100	11	100	0	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	3	25	22	50	45	0%	0%
NB	Left Turn	150	125	14	200	20	200	2	17%	0%
	Through	300	50	34	200	82	300	29	0%	2%
	Through/Right	300	50	27	150	87	275	96	0%	0%
SB	Through	200	25	1	25	7	25	18	0%	0%
	Through/Right	200	25	3	75	9	125	31	0%	0%
WB	Right Turn	175	25	4	50	8	75	13	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr, All Intervals** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	11	225	20	275	1	0%	0%
	Through	1,925	250	20	375	54	425	92	13%	0%
	Right Turn	250	175	13	300	19	300	2	3%	0%
SB	Left Turn	150	150	11	225	10	200	0	29%	0%
	Through	1,350	225	44	450	90	525	123	24%	0%
	Right Turn	150	75	12	175	24	200	2	0%	0%
SW	Left Turns	125	150	5	200	7	175	0	23%	0%
	Right Turns	1,275	200	15	350	38	400	70	24%	0%
WB	Left Turn	350	175	23	300	52	400	20	0%	0%
	Through	850	325	22	450	26	475	39	4%	0%
	Through/Right	850	350	20	475	25	525	35	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	175	11	250	21	325	36	1%	0%
	Through	850	100	11	150	55	225	152	0%	0%
NB	Through	1,350	150	9	225	19	250	26	0%	0%
	Right Turn	475	50	4	75	9	125	23	0%	0%
SB	Left Turn	300	125	8	225	25	275	41	0%	0%
	Right Turn	300	225	15	350	28	400	35	0%	2%
WB	Through	325	175	7	275	11	325	17	0%	0%
	Through/Right	325	200	12	300	16	350	19	0%	1%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	3	50	7	75	15	0%	0%
	Through	225	125	7	200	14	225	7	1%	0%
	Through/Right	225	150	8	225	11	275	23	0%	1%
NB	Left Turn	125	125	5	175	7	175	1	12%	0%
	Through/Right	1,125	75	10	150	28	250	33	0%	0%
SB	Shared	275	25	3	50	5	50	11	0%	0%
WB	Left Turn	150	50	5	75	7	100	12	0%	0%
	Through	575	50	4	100	7	125	15	0%	0%
	Through/Right	575	50	6	100	10	125	19	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	350	75	7	125	15	150	35	0%	0%
	Through/Right	350	100	10	150	16	200	41	0%	0%
SB	Left Turn	280	50	4	100	10	100	14	0%	0%
	Through	650	75	8	125	12	150	24	0%	0%
WB	Left Turn	140	100	7	175	11	200	10	0%	0%
	Right Turn	140	50	3	75	9	100	14	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	4	50	6	50	11	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	275	100	12	200	22	250	38	0%	0%
	Through/Right	275	175	15	250	23	275	24	0%	0%
SB	Left Turn	375	75	7	125	17	125	30	0%	0%
	Through	375	100	9	200	18	225	38	0%	0%
WB	Left Turn	300	150	11	250	22	325	26	1%	0%
	Shared	275	50	7	100	38	175	129	0%	0%
	Right Turn	275	25	5	50	20	75	65	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	125	12	175	31	225	50	0%	1%
	Through/Right	225	125	10	200	24	250	45	0%	1%
SB	Left Turn	200	50	2	75	7	100	9	0%	0%
	Through	350	125	5	175	11	225	34	0%	0%
WB	Left Turn	1,425	75	20	150	68	225	110	44%	0%
	Right Turn	50	50	6	100	11	100	0	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	3	25	22	50	45	0%	0%
NB	Left Turn	150	125	14	200	20	200	2	17%	0%
	Through	300	50	34	200	82	300	29	0%	2%
	Through/Right	300	50	27	150	87	275	96	0%	0%
SB	Through	200	25	1	25	7	25	18	0%	0%
	Through/Right	200	25	3	75	9	125	31	0%	0%
WB	Right Turn	175	25	4	50	8	75	13	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr, All Intervals** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	11	225	20	275	1	0%	0%
	Through	1,925	250	20	375	54	425	92	13%	0%
	Right Turn	250	175	13	300	19	300	2	3%	0%
SB	Left Turn	150	150	11	225	10	200	0	29%	0%
	Through	1,350	225	44	450	90	525	123	24%	0%
	Right Turn	150	75	12	175	24	200	2	0%	0%
SW	Left Turns	125	150	5	200	7	175	0	23%	0%
	Right Turns	1,275	200	15	350	38	400	70	24%	0%
WB	Left Turn	350	175	23	300	52	400	20	0%	0%
	Through	850	325	22	450	26	475	39	4%	0%
	Through/Right	850	350	20	475	25	525	35	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	175	11	250	21	325	36	1%	0%
	Through	850	100	11	150	55	225	152	0%	0%
NB	Through	1,350	150	9	225	19	250	26	0%	0%
	Right Turn	475	50	4	75	9	125	23	0%	0%
SB	Left Turn	300	125	8	225	25	275	41	0%	0%
	Right Turn	300	225	15	350	28	400	35	0%	2%
WB	Through	325	175	7	275	11	325	17	0%	0%
	Through/Right	325	200	12	300	16	350	19	0%	1%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	U/Left Turns	175	25	3	50	7	75	15	0%	0%
	Through	225	125	7	200	14	225	7	1%	0%
	Through/Right	225	150	8	225	11	275	23	0%	1%
NB	Left Turn	125	125	5	175	7	175	1	12%	0%
	Through/Right	1,125	75	10	150	28	250	33	0%	0%
SB	Shared	275	25	3	50	5	50	11	0%	0%
WB	Left Turn	150	50	5	75	7	100	12	0%	0%
	Through	575	50	4	100	7	125	15	0%	0%
	Through/Right	575	50	6	100	10	125	19	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	350	75	7	125	15	150	35	0%	0%
	Through/Right	350	100	10	150	16	200	41	0%	0%
SB	Left Turn	280	50	4	100	10	100	14	0%	0%
	Through	650	75	8	125	12	150	24	0%	0%
WB	Left Turn	140	100	7	175	11	200	10	0%	0%
	Right Turn	140	50	3	75	9	100	14	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	4	50	6	50	11	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	100	12	200	22	250	38	0%	0%
	Through/Right	275	175	15	250	23	275	24	0%	0%
SB	Left Turn	375	75	7	125	17	125	30	0%	0%
	Through	375	100	9	200	18	225	38	0%	0%
WB	Left Turn	300	150	11	250	22	325	26	1%	0%
	Shared	275	50	7	100	38	175	129	0%	0%
	Right Turn	275	25	5	50	20	75	65	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	125	12	175	31	225	50	0%	1%
	Through/Right	225	125	10	200	24	250	45	0%	1%
SB	Left Turn	200	50	2	75	7	100	9	0%	0%
	Through	350	125	5	175	11	225	34	0%	0%
WB	Left Turn	1,425	75	20	150	68	225	110	44%	0%
	Right Turn	50	50	6	100	11	100	0	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	3	25	22	50	45	0%	0%
NB	Left Turn	150	125	14	200	20	200	2	17%	0%
	Through	300	50	34	200	82	300	29	0%	2%
	Through/Right	300	50	27	150	87	275	96	0%	0%
SB	Through	200	25	1	25	7	25	18	0%	0%
	Through/Right	200	25	3	75	9	125	31	0%	0%
WB	Right Turn	175	25	4	50	8	75	13	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr, All Intervals** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Diagonal	225	100	11	225	20	275	1	0%	0%
	Through	1,925	250	20	375	54	425	92	13%	0%
	Right Turn	250	175	13	300	19	300	2	3%	0%
SB	Left Turn	150	150	11	225	10	200	0	29%	0%
	Through	1,350	225	44	450	90	525	123	24%	0%
	Right Turn	150	75	12	175	24	200	2	0%	0%
SW	Left Turns	125	150	5	200	7	175	0	23%	0%
	Right Turns	1,275	200	15	350	38	400	70	24%	0%
WB	Left Turn	350	175	23	300	52	400	20	0%	0%
	Through	850	325	22	450	26	475	39	4%	0%
	Through/Right	850	350	20	475	25	525	35	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	175	11	250	21	325	36	1%	0%
	Through	850	100	11	150	55	225	152	0%	0%
NB	Through	1,350	150	9	225	19	250	26	0%	0%
	Right Turn	475	50	4	75	9	125	23	0%	0%
SB	Left Turn	300	125	8	225	25	275	41	0%	0%
	Right Turn	300	225	15	350	28	400	35	0%	2%
WB	Through	325	175	7	275	11	325	17	0%	0%
	Through/Right	325	200	12	300	16	350	19	0%	1%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	3	50	7	75	15	0%	0%
	Through	225	125	7	200	14	225	7	1%	0%
	Through/Right	225	150	8	225	11	275	23	0%	1%
NB	Left Turn	125	125	5	175	7	175	1	12%	0%
	Through/Right	1,125	75	10	150	28	250	33	0%	0%
SB	Shared	275	25	3	50	5	50	11	0%	0%
WB	Left Turn	150	50	5	75	7	100	12	0%	0%
	Through	575	50	4	100	7	125	15	0%	0%
	Through/Right	575	50	6	100	10	125	19	0%	0%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	5	100	8	125	17	0%	0%
	Through/Right	350	75	8	125	15	175	33	0%	0%
SB	Left Turn	300	50	4	75	7	100	18	0%	0%
	Through	625	50	7	100	21	150	75	0%	0%
WB	Left Turn	200	100	9	150	21	150	34	0%	0%
	Right Turn	200	50	3	75	6	75	9	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	350	25	10	25	60	50	113	0%	1%
WB	Right Turn	375	25	3	50	5	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	425	50	7	100	22	150	68	0%	0%
	Through/Right	425	100	11	200	17	225	39	0%	0%
SB	Left Turn	375	50	5	100	9	125	27	0%	0%
	Through	375	75	19	150	75	225	108	1%	1%
WB	U/Left Turns	300	175	34	300	58	300	32	8%	0%
	Shared	775	225	75	450	213	575	258	11%	4%
	Right Turn	775	25	20	125	130	250	312	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	250	36	350	18	325	10	0%	39%
	Through/Right	225	275	26	350	23	325	6	0%	60%
SB	Left Turn	200	75	15	200	30	200	0	0%	0%
	Through	375	475	3	500	7	500	0	10%	99%
WB	Left Turn	1,425	75	32	175	149	250	283	35%	0%
	Right Turn	50	50	2	75	6	75	7	10%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Right Turn	300	25	19	100	77	175	113	0%	2%
NB	Left Turn	150	150	15	200	4	175	0	52%	0%
	Through	300	200	42	400	28	325	7	3%	19%
	Through/Right	300	175	43	400	48	375	23	0%	2%
SB	Through	200	25	0	25	4	25	11	0%	0%
	Through/Right	200	75	26	200	86	250	93	0%	7%
WB	Right Turn	175	25	10	50	27	75	39	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Diagonal	225	100	22	225	37	225	0	0%	0%
	Through	1,925	575	213	1,300	549	1,625	548	42%	5%
	Right Turn	250	100	17	200	39	250	29	1%	0%
SB	Left Turn	150	100	13	175	14	150	4	15%	0%
	Through	1,350	150	61	400	244	625	408	3%	0%
	Right Turn	150	50	4	100	15	150	32	0%	0%
SW	Left Turns	125	125	2	150	3	150	0	76%	0%
	Right Turns	1,275	1,025	172	1,475	133	1,325	15	26%	44%
WB	Left Turn	350	325	32	400	38	375	0	50%	0%
	Through	850	650	146	1,000	142	850	7	1%	14%
	Through/Right	850	475	95	925	134	875	26	0%	1%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	300	13	350	20	325	0	50%	0%
	Through	850	625	149	1,025	103	900	298	3%	21%
NB	Through	1,350	475	179	975	394	1,125	367	22%	8%
	Right Turn	475	100	55	325	195	375	197	0%	0%
SB	Left Turn	300	75	7	125	15	150	21	0%	0%
	Right Turn	300	250	31	400	43	400	28	0%	13%
WB	Through	75	150	7	175	19	175	14	0%	68%
	Through/Right	75	150	2	150	3	175	6	0%	70%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	4	50	13	75	41	0%	0%
	Through	225	75	8	150	16	200	37	0%	0%
	Through/Right	225	100	13	200	21	250	47	0%	0%
NB	Left Turn	125	100	10	150	7	125	2	29%	0%
	Through/Right	1,125	200	157	600	386	750	380	0%	5%
SB	Shared	275	25	5	50	11	50	17	0%	0%
WB	Left Turn	150	50	12	100	31	150	30	0%	0%
	Through	575	200	103	450	221	500	185	21%	12%
	Through/Right	575	200	103	475	225	525	178	0%	15%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	75	7	125	15	150	33	0%	0%
	Through/Right	350	75	7	150	16	175	44	0%	0%
SB	Left Turn	280	50	6	75	9	100	21	0%	0%
	Through	650	75	39	150	143	200	185	2%	1%
WB	Left Turn	140	100	8	150	15	200	16	0%	2%
	Right Turn	140	50	4	75	6	75	12	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through	425	25	24	50	94	50	106	0%	2%
WB	Right Turn	375	25	3	50	5	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	100	12	175	31	225	67	0%	0%
	Through/Right	275	150	17	250	35	275	40	0%	0%
SB	Left Turn	375	50	7	75	10	100	16	0%	0%
	Through	375	75	34	150	100	175	96	2%	2%
WB	U/Left Turns	300	100	19	150	56	175	62	2%	0%
	Shared	275	100	49	200	181	225	216	2%	2%
	Right Turn	275	25	26	100	132	125	185	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	100	19	200	35	250	43	0%	0%
	Through/Right	225	150	21	250	28	275	30	0%	1%
SB	Left Turn	200	75	10	125	29	200	72	0%	0%
	Through	350	250	54	425	86	450	52	5%	6%
WB	Left Turn	1,425	150	95	275	341	325	388	50%	1%
	Right Turn	50	50	8	100	9	100	0	12%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	3	25	21	50	46	0%	0%
NB	Left Turn	150	200	8	200	9	200	0	95%	0%
	Through	300	300	23	350	48	325	4	0%	67%
	Through/Right	300	125	45	350	64	350	9	0%	1%
SB	Through	200	25	39	50	104	50	85	0%	5%
	Through/Right	200	50	18	150	61	225	73	0%	1%
WB	Right Turn	175	25	4	50	7	50	17	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left/Through	225	1,925	3	1,950	7	1,975	6	96%	96%
	Through	1,925	1,925	4	1,950	10	1,975	8	0%	94%
	Right Turn	250	50	18	175	46	250	62	0%	0%
SB	Left Turn	150	100	10	175	19	200	7	13%	0%
	Through	1,350	175	147	450	471	550	530	3%	3%
	Right Turn	150	50	5	100	17	150	46	0%	0%
SW	Left Turns	125	175	3	175	3	175	0	86%	0%
	Right Turns	1,275	1,250	49	1,425	111	1,325	0	27%	84%
WB	Left Turn	350	275	63	400	55	400	26	15%	0%
	Through	850	300	141	550	251	625	179	0%	2%
	Through/Right	850	300	106	525	227	600	219	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	250	40	375	48	350	24	25%	0%
	Through	850	275	151	725	345	800	154	0%	12%
NB	Through	1,350	1,225	113	1,675	148	1,400	7	70%	73%
	Right Turn	475	300	69	675	43	525	0	4%	0%
SB	Left Turn	300	150	43	225	91	250	73	7%	5%
	Right Turn	300	275	29	425	30	425	22	0%	5%
WB	Through	325	100	19	200	12	150	15	0%	45%
	Through/Right	325	150	1	150	5	175	0	0%	86%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	5	50	13	75	22	0%	0%
	Through	225	75	36	175	73	200	43	6%	6%
	Through/Right	225	125	31	200	61	225	48	0%	6%
NB	Left Turn	125	150	5	200	11	175	0	83%	0%
	Through/Right	1,125	825	104	1,475	94	1,150	16	0%	49%
SB	Shared	275	25	10	75	24	75	25	0%	0%
WB	Left Turn	150	50	12	125	30	175	36	0%	0%
	Through	575	500	49	800	27	625	9	21%	65%
	Through/Right	575	525	41	775	31	625	16	0%	71%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	75	9	150	13	200	38	0%	0%
	Through/Right	350	100	9	175	22	225	48	0%	0%
SB	Left Turn	280	50	6	100	11	125	18	0%	0%
	Through	625	50	11	125	21	150	43	0%	0%
WB	Left Turn	140	100	6	175	12	200	10	0%	1%
	Right Turn	140	50	4	75	6	75	16	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Right Turn	375	25	2	50	2	75	15	0%	0%
NB										
SB										

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	100	10	200	18	250	30	0%	0%
	Through/Right	275	150	12	250	25	300	45	0%	0%
SB	Left Turn	375	75	7	125	12	125	21	0%	0%
	Through	375	75	10	125	20	150	37	0%	0%
WB	U/Left Turns	300	75	6	150	11	150	21	0%	0%
	Shared	275	100	5	150	13	150	33	0%	0%
	Right Turn	275	25	3	50	4	50	12	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	75	15	175	28	225	29	0%	0%
	Through/Right	225	125	16	225	24	250	34	0%	0%
SB	Left Turn	200	50	12	125	30	200	31	0%	0%
	Through	350	250	40	425	82	450	56	2%	4%
WB	Left Turn	1,425	125	12	225	22	250	50	51%	0%
	Right Turn	50	50	3	75	4	75	6	9%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	3	25	17	50	33	0%	0%
NB	Left Turn	150	150	1	175	1	175	0	100%	0%
	Through	300	325	2	325	3	325	2	1%	88%
	Through/Right	300	75	26	275	62	350	11	0%	1%
SB	Through	200	25	1	25	4	25	12	0%	0%
	Through/Right	200	50	20	175	57	250	61	0%	1%
WB	Right Turn	175	25	4	50	6	75	15	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left/Through	225	1,925	4	1,950	5	1,975	6	96%	95%
	Through	1,925	1,925	6	1,950	9	1,975	8	1%	95%
	Right Turn	250	75	13	200	29	250	18	1%	0%
SB	Left Turn	150	150	5	175	3	175	0	71%	0%
	Through	1,350	1,000	185	1,725	145	1,400	22	18%	54%
	Right Turn	150	50	13	150	23	175	0	2%	0%
SW	Left Turns	125	125	4	150	2	125	1	84%	0%
	Right Turns	1,275	1,275	22	1,350	49	1,325	9	12%	90%
WB	Left Turn	350	250	27	375	46	350	22	2%	0%
	Through	850	325	19	475	43	525	60	2%	0%
	Through/Right	850	375	13	475	24	525	45	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	300	7	350	15	300	0	73%	0%
	Through	850	725	67	1,150	30	875	21	0%	55%
NB	Through	1,350	1,350	32	1,475	104	1,400	11	72%	88%
	Right Turn	475	200	58	575	81	500	0	0%	0%
SB	Left Turn	300	150	7	250	18	275	37	4%	0%
	Right Turn	300	300	15	450	22	425	14	0%	6%
WB	Through	325	75	19	175	18	150	16	0%	28%
	Through/Right	325	150	3	150	7	175	12	0%	91%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	U/Left Turns	175	25	7	75	19	100	50	0%	0%
	Through	225	100	17	175	42	225	58	2%	1%
	Through/Right	225	125	20	225	37	250	44	0%	1%
NB	Left Turn	125	125	2	150	3	150	0	94%	0%
	Through/Right	1,125	1,050	50	1,375	106	1,175	8	2%	84%
SB	Shared	275	25	11	75	27	100	38	0%	0%
WB	Left Turn	150	25	11	100	29	125	41	0%	0%
	Through	575	550	14	750	45	625	15	20%	76%
	Through/Right	575	575	15	700	49	625	17	0%	86%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	100	6	175	14	225	32	0%	0%
	Through/Right	350	100	10	200	20	225	37	0%	0%
SB	Left Turn	280	100	10	150	27	175	32	0%	0%
	Through	650	75	8	125	16	150	31	0%	0%
WB	Left Turn	140	125	7	200	13	200	9	0%	2%
	Right Turn	140	50	6	100	11	100	16	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through/Right	475	25	1	25	6	25	17	0%	0%
SB	Left/Through	425	25	8	75	28	150	43	0%	0%
	Through	425	25	4	25	29	50	77	0%	0%
WB	Right Turn	375	50	1	75	3	75	8	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	100	10	200	38	275	79	0%	0%
	Through/Right	275	150	14	275	38	350	56	0%	0%
SB	Left Turn	375	75	4	125	6	125	14	0%	0%
	Through	375	100	5	150	13	200	39	0%	0%
WB	U/Left Turns	300	100	7	175	10	200	20	0%	0%
	Shared	275	100	6	175	10	200	15	0%	0%
	Right Turn	275	25	4	50	10	75	29	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	50	4	150	11	200	21	0%	0%
	Through/Right	225	75	11	200	20	250	40	0%	0%
SB	Left Turn	200	150	31	300	50	250	0	0%	0%
	Through	350	375	67	600	60	500	12	34%	43%
WB	Left Turn	1,425	150	32	325	89	425	129	64%	0%
	Right Turn	50	75	4	100	6	100	0	9%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Right Turn	300	25	11	100	40	175	67	0%	0%
NB	Left Turn	150	200	5	200	3	200	2	100%	0%
	Through	300	300	2	325	5	325	6	0%	97%
	Through/Right	300	50	16	175	83	300	140	0%	0%
SB	Through	200	225	23	375	23	325	11	0%	17%
	Through/Right	200	275	14	350	38	325	0	0%	53%
WB	Right Turn	175	25	3	50	7	75	19	0%	0%

Intersection 9 **I-80 WB Ramps & Redwood St/Redwood Pkwy & Fairgrounds Dr** **0**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left/Through	225	1,925	4	1,950	7	1,975	9	96%	98%
	Through	1,925	1,925	7	1,950	7	1,950	12	0%	96%
	Right Turn	250	25	9	100	36	200	90	0%	0%
SB	Left Turn	150	125	10	200	10	175	8	61%	0%
	Through	1,350	725	109	1,675	147	1,375	4	5%	40%
	Right Turn	150	25	4	75	13	150	37	0%	0%
SW	Left Turns	125	100	7	125	2	125	0	94%	0%
	Right Turns	1,275	1,275	24	1,325	76	1,300	9	16%	96%
WB	Left Turn	350	350	13	400	25	375	0	64%	0%
	Through	850	675	115	950	72	850	6	0%	10%
	Through/Right	850	550	95	975	99	875	7	0%	1%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	325	35	400	32	350	27	61%	0%
	Through	850	675	73	1,175	50	875	118	0%	66%
NB	Through	1,350	1,350	18	1,450	81	1,400	14	93%	92%
	Right Turn	475	150	38	525	75	525	0	0%	0%
SB	Left Turn	300	225	28	375	34	375	29	7%	5%
	Right Turn	300	400	11	450	17	450	8	0%	24%
WB	Through	325	50	11	125	19	150	2	0%	14%
	Through/Right	325	150	8	150	9	150	14	0%	97%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	50	36	75	58	100	51	0%	5%
	Through	225	75	36	175	73	200	46	5%	5%
	Through/Right	225	100	23	175	39	200	36	0%	0%
NB	Left Turn	125	150	7	175	9	175	1	95%	0%
	Through/Right	1,125	1,000	65	1,425	122	1,125	9	0%	81%
SB	Shared	275	175	30	325	44	275	26	0%	46%
WB	Left Turn	150	25	5	75	27	150	59	0%	0%
	Through	575	550	30	725	58	600	19	28%	88%
	Through/Right	575	550	28	700	54	600	17	0%	89%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	75	8	150	11	150	18	0%	0%
	Through/Right	350	100	12	200	29	250	49	0%	0%
SB	Left Turn	300	75	6	100	6	150	22	0%	0%
	Through	625	50	5	125	13	150	31	0%	0%
WB	Left Turn	200	125	10	200	14	225	12	0%	3%
	Right Turn	200	50	4	75	7	75	15	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	4	50	6	75	14	0%	0%
NB										
SB										

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	450	125	9	225	20	300	53	0%	0%
	Through/Right	450	200	14	300	28	350	40	0%	0%
SB	Left Turn	375	75	7	125	8	175	17	0%	0%
	Through	375	75	8	125	12	150	28	0%	0%
WB	Left Turn	300	100	5	175	9	200	19	0%	0%
	Shared	675	125	6	175	16	225	28	0%	0%
	Right Turn	675	25	4	75	7	75	26	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	100	10	200	23	225	30	0%	0%
	Through/Right	225	125	13	225	23	250	26	0%	1%
SB	Left Turn	200	75	7	125	19	150	48	0%	0%
	Through	375	150	18	250	33	300	61	0%	0%
WB	Left Turn	1,425	100	10	200	19	225	40	47%	0%
	Right Turn	50	50	7	100	7	100	0	13%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	25	1	25	7	25	20	0%	0%
	Through/Right	300	25	2	25	15	50	33	0%	0%
SB	Through	225	25	27	50	102	125	128	0%	1%
WB	Right Turn	175	25	4	50	4	75	14	0%	0%

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	225	75	11	175	35	275	17	0%	0%
	Through	1,925	1,025	453	1,450	570	1,400	409	9%	1%
SB	Left Turn	1,350	1,375	11	1,400	10	1,400	6	90%	100%
	Right Turn	150	100	20	250	20	200	0	2%	0%
WB	Through	125	150	3	175	6	175	16	0%	20%
	Right Turn	125	50	4	75	7	100	14	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	225	12	300	15	300	21	0%	0%
	Through	325	50	11	150	53	250	116	0%	0%
SB	Left Turn	300	75	7	125	14	150	33	0%	0%
	Right Turn	300	225	40	350	75	350	55	0%	3%
WB	Through	75	150	3	175	8	175	6	0%	90%
	Through/Right	75	150	3	175	7	175	9	0%	84%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	50	8	100	27	175	64	0%	0%
	Through	225	200	7	275	9	300	12	9%	3%
	Through/Right	225	225	8	325	9	300	14	0%	10%
NB	Left Turn	125	175	2	175	6	175	0	93%	0%
	Through/Right	1,125	1,050	187	1,275	99	1,175	8	0%	85%
SB	Shared	250	25	3	50	6	50	11	0%	0%
WB	Left Turn	150	50	7	100	11	125	15	1%	0%
	Through	1,575	1,100	454	1,650	602	1,400	416	0%	26%
	Through/Right	1,575	1,175	408	1,675	513	1,475	357	0%	36%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	50	4	125	9	125	18	0%	0%
	Through/Right	350	75	9	150	20	200	60	0%	0%
SB	Left Turn	280	50	3	100	12	100	23	0%	0%
	Through	650	50	6	100	16	150	31	0%	0%
WB	Left Turn	140	100	7	175	12	200	6	0%	1%
	Right Turn	140	50	2	75	4	75	11	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through/Right	475	25	1	25	6	25	18	0%	0%
WB	Right Turn	375	25	3	50	6	50	7	0%	0%
SB										

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	100	8	200	21	225	38	0%	0%
	Through/Right	275	175	10	275	21	325	28	0%	0%
SB	Left Turn	375	50	6	100	11	125	36	0%	0%
	Through	375	75	7	125	15	175	18	0%	0%
WB	Left Turn	300	100	6	150	9	175	17	0%	0%
	Shared	275	125	5	175	13	175	27	0%	0%
	Right Turn	275	25	2	50	6	50	17	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	100	13	175	22	225	24	0%	0%
	Through/Right	225	125	11	200	16	225	31	0%	0%
SB	Left Turn	200	75	11	125	26	150	42	0%	0%
	Through	350	150	14	275	38	325	62	0%	0%
WB	Left Turn	1,425	100	10	150	21	200	44	39%	0%
	Right Turn	50	50	3	75	4	75	3	11%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	25	1	25	7	25	19	0%	0%
	Through/Right	300	25	1	25	9	25	26	0%	0%
SB	Through	200	25	18	100	86	175	124	0%	1%
WB	Right Turn	175	25	3	50	7	75	15	0%	0%

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	225	75	9	125	28	175	67	0%	0%
	Through	1,925	175	27	300	67	375	115	4%	0%
SB	Left Turn	1,350	150	14	250	39	325	68	10%	0%
	Right Turn	125	75	10	150	13	175	0	1%	0%
WB	Through	850	150	4	175	6	175	11	0%	17%
	Right Turn	850	50	6	100	11	125	20	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	225	15	325	19	300	4	1%	0%
	Through	850	50	13	175	69	325	132	0%	1%
SB	Left Turn	300	75	5	125	8	125	20	0%	0%
	Right Turn	300	225	21	350	37	400	35	0%	4%
WB	Through	325	150	2	175	5	175	0	0%	88%
	Through/Right	325	150	2	175	6	175	5	0%	85%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	5	75	17	125	53	0%	0%
	Through	225	150	11	250	16	250	28	5%	1%
	Through/Right	225	200	15	300	25	300	15	0%	5%
NB	Left Turn	125	125	2	150	6	150	0	84%	0%
	Through/Right	1,125	900	87	1,425	71	1,175	9	0%	52%
SB	Shared	275	25	4	50	8	50	15	0%	0%
WB	Left Turn	150	50	11	100	21	125	32	1%	0%
	Through	575	1,250	110	2,050	136	1,625	17	0%	37%
	Through/Right	575	1,300	96	2,000	110	1,625	12	0%	51%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	75	8	150	11	150	18	0%	0%
	Through/Right	350	100	12	200	29	250	49	0%	0%
SB	Left Turn	280	75	6	100	6	150	22	0%	0%
	Through	650	50	5	125	13	150	31	0%	0%
WB	Left Turn	140	125	10	200	14	225	12	0%	3%
	Right Turn	140	50	4	75	7	75	15	0%	0%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
WB	Right Turn	375	25	4	50	6	75	14	0%	0%
NB										
SB										

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	275	125	9	225	20	300	53	0%	0%
	Through/Right	275	200	14	300	28	350	40	0%	0%
SB	Left Turn	375	75	7	125	8	175	17	0%	0%
	Through	375	75	8	125	12	150	28	0%	0%
WB	Left Turn	300	100	5	175	9	200	19	0%	0%
	Shared	275	125	6	175	16	225	28	0%	0%
	Right Turn	275	25	4	75	7	75	26	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	100	10	200	23	225	30	0%	0%
	Through/Right	225	125	13	225	23	250	26	0%	1%
SB	Left Turn	200	75	7	125	19	150	48	0%	0%
	Through	350	150	18	250	33	300	61	0%	0%
WB	Left Turn	1,425	100	10	200	19	225	40	47%	0%
	Right Turn	50	50	7	100	7	100	0	13%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	25	1	25	7	25	20	0%	0%
	Through/Right	300	25	2	25	15	50	33	0%	0%
SB	Through	200	25	27	50	102	125	128	0%	1%
WB	Right Turn	175	25	4	50	4	75	14	0%	0%

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	225	75	11	175	35	275	17	0%	0%
	Through	1,925	1,025	453	1,450	570	1,400	409	9%	1%
SB	Left Turn	1,350	1,375	11	1,400	10	1,400	6	90%	100%
	Right Turn	125	100	20	250	20	200	0	2%	0%
WB	Through	850	150	3	175	6	175	16	0%	20%
	Right Turn	850	50	4	75	7	100	14	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	225	12	300	15	300	21	0%	0%
	Through	850	50	11	150	53	250	116	0%	0%
SB	Left Turn	300	75	7	125	14	150	33	0%	0%
	Right Turn	300	225	40	350	75	350	55	0%	3%
WB	Through	325	150	3	175	8	175	6	0%	90%
	Through/Right	325	150	3	175	7	175	9	0%	84%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	50	8	100	27	175	64	0%	0%
	Through	225	200	7	275	9	300	12	9%	3%
	Through/Right	225	225	8	325	9	300	14	0%	10%
NB	Left Turn	125	175	2	175	6	175	0	93%	0%
	Through/Right	1,125	1,050	187	1,275	99	1,175	8	0%	85%
SB	Shared	275	25	3	50	6	50	11	0%	0%
WB	Left Turn	150	50	7	100	11	125	15	1%	0%
	Through	575	1,100	454	1,650	602	1,400	416	0%	26%
	Through/Right	575	1,175	408	1,675	513	1,475	357	0%	36%

Intersection 4 **Admiral Callaghan Ln & Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	100	8	200	18	225	42	0%	0%
	Through/Right	350	125	8	225	23	275	37	0%	0%
SB	Left Turn	280	100	9	150	18	200	32	0%	0%
	Through	650	75	8	125	13	150	22	0%	0%
WB	Left Turn	140	150	10	200	14	200	7	0%	2%
	Right Turn	140	50	5	100	11	100	13	0%	0%

Intersection 5 **Admiral Callaghan Ln & Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through/Right	475	25	0	25	0	25	19	0%	0%
WB	Right Turn	375	25	2	50	3	75	11	0%	0%

Intersection 6 **Admiral Callaghan Ln & Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	275	150	21	275	37	325	48	0%	0%
	Through/Right	275	225	20	375	33	400	48	0%	0%
SB	Left Turn	375	75	8	125	17	150	26	0%	0%
	Through	375	75	8	125	17	150	29	0%	0%
WB	Left Turn	300	125	14	200	20	200	28	0%	0%
	Shared	275	150	11	200	21	225	30	0%	0%
	Right Turn	275	25	3	50	13	75	32	0%	0%

Intersection 7 **Admiral Callaghan Ln & Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	100	13	200	17	225	15	0%	0%
	Through/Right	225	125	12	200	23	225	21	0%	0%
SB	Left Turn	200	125	31	225	61	250	1	2%	0%
	Through	350	225	105	400	172	425	81	17%	18%
WB	Left Turn	1,425	200	122	400	303	475	316	59%	0%
	Right Turn	50	50	5	100	11	100	0	14%	0%

Intersection 8 **Admiral Callaghan Ln & Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	25	1	25	8	25	23	0%	0%
	Through/Right	300	25	1	25	9	25	24	0%	0%
SB	Through	200	225	69	375	60	325	18	0%	42%
WB	Right Turn	175	25	4	50	7	75	12	0%	0%

Intersection 9 **Redwood St/Redwood Pkwy & Fairgrounds Dr** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	225	150	22	300	35	275	24	0%	0%
	Through	1,925	1,025	514	1,500	591	1,475	467	53%	7%
SB	Left Turn	1,350	1,350	8	1,400	36	1,400	12	99%	97%
	Right Turn	125	50	8	125	19	175	0	4%	0%
WB	Through	850	150	3	175	8	175	13	0%	22%
	Right Turn	850	50	5	75	11	100	23	0%	0%

Intersection 10 **Redwood Pkwy & Admiral Callaghan Ln** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	200	10	250	13	275	16	0%	0%
	Through	850	50	5	75	10	125	36	0%	0%
SB	Left Turn	300	125	18	275	38	325	24	0%	1%
	Right Turn	300	375	24	450	19	425	14	0%	36%
WB	Through	325	150	2	175	4	200	5	0%	90%
	Through/Right	325	150	2	175	6	175	8	0%	80%

Intersection 4 **Admiral Callaghan Ln & Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	125	16	200	38	250	40	0%	0%
	Through/Right	350	150	11	225	31	300	43	0%	0%
SB	Left Turn	300	75	6	100	10	125	19	0%	0%
	Through	625	75	10	125	18	175	30	0%	0%
WB	Left Turn	200	150	11	200	11	225	12	0%	3%
	Right Turn	200	50	3	75	8	100	24	0%	0%

Intersection 5 **Admiral Callaghan Ln & Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through/Right	375	25	1	25	6	25	18	0%	0%
WB	Right Turn	375	25	4	50	8	75	17	0%	0%

Intersection 6 **Admiral Callaghan Ln & Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	425	125	17	225	39	300	78	0%	0%
	Through/Right	425	175	16	300	31	350	63	0%	0%
SB	Left Turn	375	100	6	150	12	200	20	0%	0%
	Through	375	75	10	125	17	150	31	0%	0%
WB	U/Left Turns	300	175	24	275	38	300	42	1%	0%
	Shared	675	200	24	275	33	325	53	1%	0%
	Right Turn	675	50	5	75	23	150	71	0%	0%

Intersection 7 **Admiral Callaghan Ln & Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	125	13	225	24	250	37	0%	1%
	Through/Right	225	175	11	250	21	275	36	0%	1%
SB	Left Turn	200	125	15	250	21	250	1	0%	0%
	Through	400	450	34	575	63	500	2	16%	77%
WB	Left Turn	1,425	250	45	400	106	450	120	70%	0%
	Right Turn	50	75	7	125	4	100	0	31%	0%

Intersection 8 **Admiral Callaghan Ln & Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	300	25	1	25	9	25	27	0%	0%
	Through/Right	300	25	3	25	14	75	34	0%	0%
SB	Through	225	275	80	350	101	325	77	0%	35%
WB	Right Turn	175	25	3	50	9	75	29	0%	0%

Intersection 9 **Redwood St/Redwood Pkwy & Fairgrounds Dr** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	225	100	8	250	19	275	20	0%	0%
	Through	1,925	1,875	59	2,200	65	1,975	0	33%	66%
SB	Left Turn	1,350	1,350	4	1,375	15	1,400	19	99%	98%
	Right Turn	150	25	9	75	38	150	66	0%	0%
WB	Through	125	125	8	200	17	175	18	0%	15%
	Right Turn	125	25	2	75	5	75	10	0%	0%

Intersection 10 **Redwood Pkwy & Admiral Callaghan Ln** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	225	14	300	20	300	22	1%	0%
	Through	325	75	9	100	37	200	119	0%	0%
SB	Left Turn	300	300	63	425	63	400	28	54%	31%
	Right Turn	300	400	5	425	14	425	12	0%	38%
WB	Through	75	150	2	175	7	200	3	0%	91%
	Through/Right	75	150	2	175	6	200	6	0%	84%

Intersection 11 **Admiral Callaghan Ln & Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	U/Left Turns	175	50	8	100	24	175	55	0%	0%
	Through	200	200	12	300	15	300	13	7%	4%
	Through/Right	200	250	11	350	11	325	17	0%	11%
NB	Left Turn	125	175	3	175	2	175	1	100%	0%
	Through/Right	1,125	1,125	14	1,175	61	1,150	17	0%	98%
SB	Shared	250	25	3	50	9	75	21	0%	0%
WB	Left Turn	150	50	4	100	8	125	18	0%	0%
	Through	1,575	1,475	94	1,875	109	1,625	6	0%	50%
	Through/Right	1,575	1,500	81	1,850	86	1,650	0	0%	75%

Intersection 11 **Admiral Callaghan Ln & Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	50	4	75	8	100	18	0%	0%
	Through	225	100	9	200	27	225	47	2%	1%
	Through/Right	225	125	9	225	18	275	30	0%	2%
NB	Left Turn	125	150	6	200	6	175	1	32%	0%
	Through/Right	1,125	125	15	300	33	350	64	0%	0%
SB	Shared	275	25	2	50	4	50	15	0%	0%
WB	Left Turn	150	50	9	125	18	150	27	2%	0%
	Through	575	1,300	159	2,125	91	1,625	15	0%	52%
	Through/Right	575	1,350	133	2,050	68	1,625	9	0%	66%

Intersection 4 **Admiral Callaghan Ln & Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	75	5	150	14	200	36	0%	0%
	Through/Right	350	100	4	175	16	200	33	0%	0%
SB	Left Turn	280	50	5	100	13	100	22	0%	0%
	Through	650	75	9	125	22	150	52	0%	0%
WB	Left Turn	140	125	10	200	16	200	11	0%	2%
	Right Turn	140	50	3	75	8	100	19	0%	0%

Intersection 5 **Admiral Callaghan Ln & Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
WB	Right Turn	375	25	3	50	6	50	0	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%
SB	Through	425	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln & Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	75	16	150	29	225	61	0%	0%
	Through/Right	275	150	16	250	26	300	40	0%	0%
SB	Left Turn	375	50	6	100	9	125	15	0%	0%
	Through	375	50	6	100	10	150	25	0%	0%
WB	U/Left Turns	300	250	45	350	44	300	3	16%	0%
	Shared	275	425	138	750	227	750	180	39%	6%
	Right Turn	275	50	22	150	128	275	272	0%	0%

Intersection 7 **Admiral Callaghan Ln & Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	125	20	250	38	275	19	0%	5%
	Through/Right	225	150	19	275	31	300	9	0%	8%
SB	Left Turn	200	100	19	175	44	200	32	0%	0%
	Through	350	350	91	550	79	500	24	9%	42%
WB	Left Turn	1,425	200	17	325	34	350	45	66%	0%
	Right Turn	50	50	4	75	3	75	7	13%	0%

Intersection 8 **Admiral Callaghan Ln & Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	25	1	25	5	25	16	0%	0%
	Through/Right	300	25	1	25	7	25	20	0%	0%
SB	Through	200	125	104	250	191	275	159	0%	13%

Intersection 9 **Redwood St/Redwood Pkwy & Fairgrounds Dr** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	225	125	13	275	12	225	13	0%	0%
	Through	1,925	1,950	67	2,500	176	1,975	13	74%	92%
SB	Left Turn	1,350	1,100	269	1,475	215	1,400	17	85%	54%
	Right Turn	150	75	8	175	11	175	0	2%	0%
WB	Through	850	150	3	175	6	175	8	0%	21%
	Right Turn	850	50	3	100	7	125	19	0%	0%

Intersection 10 **Redwood Pkwy & Admiral Callaghan Ln** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	200	11	275	24	300	19	0%	0%
	Through	850	50	8	75	42	125	116	0%	0%
SB	Left Turn	300	125	11	200	26	225	43	1%	0%
	Right Turn	300	350	22	450	24	425	14	0%	26%
WB	Through	325	150	2	175	7	200	6	0%	88%
	Through/Right	325	150	1	175	6	175	8	0%	84%

Intersection 11 **Admiral Callaghan Ln & Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	3	50	4	75	11	0%	0%
	Through	225	125	18	225	29	275	47	5%	2%
	Through/Right	225	150	18	275	31	300	19	0%	5%
NB	Left Turn	125	125	3	150	4	125	0	43%	0%
	Through/Right	1,125	200	38	425	92	475	110	0%	0%
SB	Shared	275	25	3	50	7	50	11	0%	0%
WB	Left Turn	150	25	7	75	17	100	23	0%	0%
	Through	575	1,500	52	1,825	77	1,625	13	0%	57%
	Through/Right	575	1,550	27	1,800	57	1,625	9	0%	85%

Intersection 4 **Admiral Callaghan Ln & Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	125	16	200	38	250	40	0%	0%
	Through/Right	350	150	11	225	31	300	43	0%	0%
SB	Left Turn	280	75	6	100	10	125	19	0%	0%
	Through	650	75	10	125	18	175	30	0%	0%
WB	Left Turn	140	150	11	200	11	225	12	0%	3%
	Right Turn	140	50	3	75	8	100	24	0%	0%

Intersection 5 **Admiral Callaghan Ln & Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
SB	Through/Right	425	25	1	25	6	25	18	0%	0%
WB	Right Turn	375	25	4	50	8	75	17	0%	0%
NB	Through	475	25	0	25	0	25	0	0%	0%
	Through/Right	475	25	0	25	0	25	0	0%	0%

Intersection 6 **Admiral Callaghan Ln & Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	275	125	17	225	39	300	78	0%	0%
	Through/Right	275	175	16	300	31	350	63	0%	0%
SB	Left Turn	375	100	6	150	12	200	20	0%	0%
	Through	375	75	10	125	17	150	31	0%	0%
WB	U/Left Turns	300	175	24	275	38	300	42	1%	0%
	Shared	275	200	24	275	33	325	53	1%	0%
	Right Turn	275	50	5	75	23	150	71	0%	0%

Intersection 7 **Admiral Callaghan Ln & Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
NB	Through	225	125	13	225	24	250	37	0%	1%
	Through/Right	225	175	11	250	21	275	36	0%	1%
SB	Left Turn	200	125	15	250	21	250	1	0%	0%
	Through	350	450	34	575	63	500	2	16%	77%
WB	Left Turn	1,425	250	45	400	106	450	120	70%	0%
	Right Turn	50	75	7	125	4	100	0	31%	0%

Intersection 8 **Admiral Callaghan Ln & Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	25	1	25	9	25	27	0%	0%
	Through/Right	300	25	3	25	14	75	34	0%	0%
SB	Through	200	275	80	350	101	325	77	0%	35%
WB	Right Turn	175	25	3	50	9	75	29	0%	0%

Intersection 9 **Redwood St/Redwood Pkwy & Fairgrounds Dr** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	225	100	8	250	19	275	20	0%	0%
	Through	1,925	1,875	59	2,200	65	1,975	0	33%	66%
SB	Left Turn	1,350	1,350	4	1,375	15	1,400	19	99%	98%
	Right Turn	150	25	9	75	38	150	66	0%	0%
WB	Through	850	125	8	200	17	175	18	0%	15%
	Right Turn	850	25	2	75	5	75	10	0%	0%

Intersection 10 **Redwood Pkwy & Admiral Callaghan Ln** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	Left Turn	300	225	14	300	20	300	22	1%	0%
	Through	850	75	9	100	37	200	119	0%	0%
SB	Left Turn	300	300	63	425	63	400	28	54%	31%
	Right Turn	300	400	5	425	14	425	12	0%	38%
WB	Through	325	150	2	175	7	200	3	0%	91%
	Through/Right	325	150	2	175	6	200	6	0%	84%

Intersection 11 **Admiral Callaghan Ln & Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Std. Dev.	95th Queue (ft) Average	Std. Dev.	Maximum Queue (ft) Average	Std. Dev.	Block Time Pocket	Upstream
EB	U/Left Turns	175	50	8	100	24	175	55	0%	0%
	Through	225	200	12	300	15	300	13	7%	4%
	Through/Right	225	250	11	350	11	325	17	0%	11%
NB	Left Turn	125	175	3	175	2	175	1	100%	0%
	Through/Right	1,125	1,125	14	1,175	61	1,150	17	0%	98%
SB	Shared	275	25	3	50	9	75	21	0%	0%
WB	Left Turn	150	50	4	100	8	125	18	0%	0%
	Through	575	1,475	94	1,875	109	1,625	6	0%	50%
	Through/Right	575	1,500	81	1,850	86	1,650	0	0%	75%

Intersection 4 **Admiral Callaghan Ln/Vallejo Corners** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	350	275	37	500	21	425	15	0%	51%
	Through/Right	350	275	36	500	26	425	12	0%	52%
SB	Left Turn	280	50	7	125	18	175	26	0%	0%
	Through	650	50	7	100	21	150	34	0%	0%
WB	Left Turn	140	100	25	200	21	200	11	0%	7%
	Right Turn	140	125	25	225	47	200	27	0%	41%

Intersection 5 **Admiral Callaghan Ln/Target Driveway** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	475	200	40	500	48	400	15	0%	46%
	Through/Right	475	200	41	500	46	400	17	0%	46%
SB	Through	425	25	24	50	96	50	112	0%	0%
WB	Right Turn	375	75	28	200	66	250	65	0%	0%

Intersection 6 **Admiral Callaghan Ln/Turner Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	275	300	55	600	38	500	4	0%	43%
	Through/Right	275	350	46	600	28	500	7	0%	44%
SB	Left Turn	375	75	25	175	72	225	61	0%	0%
	Through	375	75	46	175	119	225	99	2%	3%
WB	U/Left Turns	300	225	52	375	43	350	1	27%	0%
	Shared	275	350	169	675	251	725	125	29%	17%
	Right Turn	275	50	14	125	39	175	52	0%	0%

Intersection 7 **Admiral Callaghan Ln/Rotary Way** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	225	175	30	325	18	300	2	0%	34%
	Through/Right	225	225	29	350	11	300	12	0%	39%
SB	Left Turn	200	125	22	300	24	250	1	0%	0%
	Through	350	300	63	650	44	500	6	38%	48%
WB	Left Turn	1,425	725	225	1,400	286	1,425	54	66%	19%
	Right Turn	50	75	10	125	8	100	0	43%	0%

Intersection 8 **Admiral Callaghan Ln/I-80 EB Ramps** **Side-street Stop**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
NB	Through	300	100	35	350	82	350	48	0%	23%
	Through/Right	300	100	30	325	62	325	16	0%	27%
SB	Through	200	200	38	425	29	325	15	0%	38%

Intersection 9 **Fairgrounds Dr/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	225	125	22	300	29	275	14	0%	0%
	Through	1,925	1,950	248	2,600	129	1,975	14	83%	95%
SB	Left Turn	1,350	325	176	875	414	1,100	406	37%	8%
	Right Turn	150	75	17	125	34	175	26	0%	0%
WB	Through	850	125	18	200	12	175	15	0%	11%
	Right Turn	850	25	4	75	6	75	14	0%	0%

Intersection 10 **Admiral Callaghan Ln-I-80 EB Ramp/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Left Turn	300	200	24	325	28	325	11	19%	13%
	Through	850	100	47	350	99	400	132	1%	23%
SB	Left Turn	300	100	16	225	31	300	50	1%	1%
	Right Turn	300	275	44	525	20	425	17	0%	23%
WB	Through	325	125	19	200	20	175	15	0%	66%
	Through/Right	325	150	2	175	4	200	6	0%	81%

Intersection 11 **Admiral Callaghan/Redwood Pkwy** **Signal**

Direction	Lane Group	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	U/Left Turns	175	25	6	75	20	100	60	0%	0%
	Through	225	100	35	200	52	225	39	8%	5%
	Through/Right	225	125	36	250	49	275	29	0%	8%
NB	Left Turn	125	150	6	175	7	175	0	73%	0%
	Through/Right	1,125	600	166	1,175	108	1,125	36	1%	21%
SB	Shared	275	25	7	75	26	100	42	0%	0%
WB	Left Turn	150	50	8	100	17	125	25	1%	0%
	Through	575	1,525	96	1,725	99	1,625	13	0%	53%
	Through/Right	575	1,600	18	1,675	61	1,625	8	0%	94%

Appendix F:
Costco Trip Generation Rate Development



COSTCO TRIP RATE DEVELOPMENT

Data Collection

Costco trip generation rates were developed based on driveway counts conducted in November 2017 at the existing Costco store on Plaza Drive in Vallejo. Driveway counts were collected from 12 PM – 2 PM and 4 PM – 6 PM on Tuesday, Wednesday, and Thursday and from 12 PM – 2 PM on Saturday. Additional counts were taken in July 2019 from 7 AM – 9 AM to capture the AM peak period traffic associated with the existing Costco gas pumps only. The Weekday Mid-day, Weekday PM, and Saturday Mid-day counts included trips associated with both the gas and retail portions of Costco, while the Weekday AM counts only captured trips associated with the gas pumps as the retail portion of the store is not open before 9 AM. Daily driveway data was not collected, however daily trip rates at other west coast Costco stores were provided by Kittleson & Associates in two memos dated July 22, 2019, and another memo dated September 13, 2019; these memos are included at the end of this appendix.

Peak Hour Trip Generation Rate Development

The average Weekday AM, Weekday Mid-day, Weekday PM, and Saturday Mid-day peak hour trip generation rates were derived using the collected driveway data. The average peak hour volume for each peak hour was divided by the existing Costco square footage to develop a custom trip rate, as shown in Table 1.

Table 1: Driveway Data Averages and Trip Rates

Peak Hour	Vehicles			Existing Costco Square Footage	Custom Peak Hour Trip Rate
	In	Out	Total		
Weekday AM Peak Hour					
Tuesday	76	76	152		
Average	**76**	**76**	**152**	**125.437 ksf**	**1.22**
Weekday Mid-day Peak Hour					
Tuesday	606	609	1,215		
Wednesday	606	596	1,202		
Thursday	626	667	1,293		
Average	**613**	**624**	**1,237**	**125.437 ksf**	**9.86**
Weekday PM Peak Hour					
Tuesday	690	723	1,413		
Wednesday	702	725	1,427		
Thursday	691	749	1,440		
Average	**694**	**732**	**1,427**	**125.437 ksf**	**11.37**
Saturday Peak Hour					
Saturday	769	730	1499		
Average	**769**	**730**	**1,499**	**125.437 ksf**	**11.95**

Source: Fehr & Peers, 2019.

Daily Trip Generation Rate Development

In order to determine if the average daily trip rates at other west coast Costco stores, provided by Kittleson, were appropriate for the Vallejo Costco, the average PM trip rate for the Vallejo Costco (11.37) was compared to the other west coast Costco stores average PM trip rate (7.17). The other west coast Costco stores average PM trip rate (7.17) was then compared to the average west coast Costco stores average daily rate (79.27), this ratio was identified as 11.06. The Vallejo Costco PM trip rate was then grown based on the ratio between the west coast average daily and PM peak hour trip rates. This resulted in an estimated daily trip rate of 102.49 daily trips per 1,000 square foot for the Vallejo Costco site.

Trip Generation Rate Evaluation

To ensure that the trip generation rates developed as described above can be considered reasonable estimates for the future development, the trip rates at the Vallejo Costco were compared with rates at other west coast Costco stores.

This data was provided by Kittleson & Associates in two memos dated July 22, 2019, and another memo dated September 13, 2019; these memos are included at the end of this appendix. The July memos describe Costco store trip rates and "pass-by" characteristics[1], and Costco gas station trip generation rates, from other Costco traffic studies. The September memo describes observed changes in trip generation rates when stores are expanded, including expansions which add a gas station (eleven surveys) and expansions which do not add a gas station (two surveys).

The July trip generation memo indicates that the existing Vallejo Costco generates higher trips per thousand square foot in the Weekday PM peak hour (11.37 trips per ksf) than the average of the other surveyed Costco stores (7.17 trips per ksf). This holds true for the Saturday mid-day peak hour also, with the Vallejo store generating 11.95 trips per ksf as compared to 9.79 trips per ksf for the average of the other surveyed Costcos. Additionally, the September memo shows that expanded stores serve, on average, 16% – 20% more customers (note this is all-day customers, not peak hour trips, which are likely more constrained than all-day transactions). Thus, applying this substantially higher-than-average rate (11.37 versus 7.17, for the PM peak hour) to the larger store size with the Project (a 21.3% increase in floor area, thus 21.3% more peak hour trips assumed) can be considered to adequately capture the potential growth in trips.

A second issue that was examined was that the original trip generation estimates did not consider the inclusion of a fast food drive through restaurant as part of the total retail portion of the project. Fast food restaurants with drive-throughs have higher peak hour trip generation rates than general retail uses, based on trip generation rates contained in ITE's *Trip Generation* (10th Edition). To check if the original trip generation estimates adequately describe the project's trip generation with the fast food drive through use, a test calculation was prepared using the following method:

- Estimate the new Costco project trips by increasing the existing Costco site counts by 18 percent (the average of the 16% - 20% findings noted above)

[1] Pass-by and diverted trips are those that visit a site as part of a trip between a separate origin and destination, such as a trip from work to home in which a driver stops at a store or gas station along their route.

- Estimate the retail trips and fast food with drive through trips separately using the appropriate trip generation rates in ITE's *Trip Generation* (10th Edition).
- Incorporate a 1.5% internalization factor to represent trips made to two or more uses within the commercial portion of the site.

The internalization factor noted above was not assumed in the original trip generation estimate, to ensure a conservative analysis. However, ITE's *Trip Generation Handbook* describes appropriate internalization rates for different mixes of uses, and the 1.5% rate is supported by this guidance document.

As shown below in Table 2, the original trip generation estimates exceed the test case trip generation estimates in the Weekday AM, Mid-day, and PM peak hours. For the Saturday Mid-day peak hour, the original trip generation estimate is only 34 trips lower than the test case trip generation estimate, a difference of 1.6%. Based on Fehr & Peers judgment and understanding of the traffic simulation models and Synchro analyses conducted for this study, this trip generation difference would not affect the significance findings in the impact analysis, nor result in any new significant impacts.

Based on the above evaluation, the original project trip generation estimates are considered to adequately capture the increase in Costco warehouse size, the increase in gas station fueling pumps, and the inclusion of a drive through restaurant.

Table 2: Trip Generation Test

	AM			Mid-day			PM			Saturday		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
SF Residential	33	100	134	97	57	154	112	66	178	89	76	166
New Costco with Gas	90	89	179	730	730	1,459	842	842	1,683	867	902	1,769
General Retail – Minus Drive Through	15	9	24	40	40	80	44	48	92	62	57	119
Fast Food with Drive Through	40	38	79	40	37	77	46	43	89	76	73	150
Internalization Reduction	2	2	4	12	12	24	14	14	28	15	16	31
Total	**176**	**234**	**411**	**895**	**852**	**1,746**	**1,030**	**984**	**2,014**	**1,080**	**1,093**	**2,173**
Difference: Original – Test:			**15**			**13**			**15**			**(34)**

Prepared by National Data & Surveying Services

IN & OUTS

Location: Costco
City: Vallejo

Date: 11/9/2017
Day: Thursday

TIME	Vehicals		
	IN	OUT	TOTAL
12:00 PM	186	136	***322***
12:15 PM	152	144	***296***
12:30 PM	148	166	***314***
12:45 PM	127	158	***285***
1:00 PM	154	158	***312***
1:15 PM	165	166	***331***
1:30 PM	139	171	***310***
1:45 PM	168	172	***340***
Totals	***1239***	***1271***	***2510***
4:00 PM	146	162	***308***
4:15 PM	136	168	***304***
4:30 PM	134	154	***288***
4:45 PM	163	151	***314***
5:00 PM	129	149	***278***
5:15 PM	117	140	***257***
5:30 PM	138	170	***308***
5:45 PM	143	113	***256***
Totals	***1106***	***1207***	***2313***

Prepared by National Data & Surveying Services

IN & OUTS

Location: Costco
City: Vallejo

Date: 11/11/2017
Day: Saturday

TIME	Vehicals		
	IN	OUT	TOTAL
12:00 PM	175	176	***351***
12:15 PM	191	172	***363***
12:30 PM	194	183	***377***
12:45 PM	193	179	***372***
1:00 PM	186	172	***358***
1:15 PM	196	196	***392***
1:30 PM	184	182	***366***
1:45 PM	179	185	***364***
Totals	***1498***	***1445***	***2943***

Prepared by National Data & Surveying Services

IN & OUTS

Location: Costco
City: Vallejo

Date: 11/14/2017
Day: Tuesday

TIME	Vehicals		
	IN	OUT	TOTAL
12:00 PM	142	154	***296***
12:15 PM	133	130	***263***
12:30 PM	149	137	***286***
12:45 PM	152	134	***286***
1:00 PM	155	149	***304***
1:15 PM	150	156	***306***
1:30 PM	160	162	***322***
1:45 PM	141	142	***283***
Totals	***1182***	***1164***	***2346***
4:00 PM	137	153	***290***
4:15 PM	131	141	***272***
4:30 PM	121	135	***256***
4:45 PM	156	176	***332***
5:00 PM	145	131	***276***
5:15 PM	131	130	***261***
5:30 PM	149	160	***309***
5:45 PM	121	128	***249***
Totals	***1091***	***1154***	***2245***

Prepared by National Data & Surveying Services

IN & OUTS

Location: Costco
City: Vallejo

Date: 11/15/2017
Day: Wednesday

TIME	Vehicals		
	IN	OUT	TOTAL
12:00 PM	165	157	***322***
12:15 PM	148	155	***303***
12:30 PM	145	136	***281***
12:45 PM	151	135	***286***
1:00 PM	148	164	***312***
1:15 PM	145	145	***290***
1:30 PM	149	132	***281***
1:45 PM	164	155	***319***
Totals	***1215***	***1179***	***2394***
4:00 PM	140	136	***276***
4:15 PM	145	151	***296***
4:30 PM	148	129	***277***
4:45 PM	144	151	***295***
5:00 PM	135	144	***279***
5:15 PM	146	167	***313***
5:30 PM	144	147	***291***
5:45 PM	122	140	***262***
Totals	***1124***	***1165***	***2289***

Prepared by National Data & Surveying Services

Driveway Study

Location: Costco Gasoline station Dwy **City:** Vallejo

TIME	Volume 7/23/2019 Tuesday In
7:00 AM	41
7:15 AM	35
7:30 AM	27
7:45 AM	23
8:00 AM	40
8:15 AM	41
8:30 AM	30
8:45 AM	41
Totals	***278***
12:00 PM	56
12:15 PM	62
12:30 PM	55
12:45 PM	62
1:00 PM	59
1:15 PM	58
1:30 PM	61
1:45 PM	62
Totals	***475***
4:00 PM	65
4:15 PM	64
4:30 PM	58
4:45 PM	61
5:00 PM	59
5:15 PM	65
5:30 PM	58
5:45 PM	47
Totals	***477***
Grand Total	***1230***

Prepared by National Data & Surveying Services

Driveway Study

Location: Costco Gasoline station Dwy **City:** Vallejo

TIME	Volume 7/20/2019 Saturday In
12:00 PM	80
12:15 PM	58
12:30 PM	65
12:45 PM	64
1:00 PM	60
1:15 PM	72
1:30 PM	59
1:45 PM	71
Totals	***529***

Costco Gas Folsom
8/14/2019
4:55 PM - 5:25 PM

3-pumps		**2-pumps**	
Aisle 1	19	Aisle 7	13
Aisle 2	21	Aisle 8	13
Aisle 3	21		
Aisle 4	17	**Average**	**13**
Aisle 5	16		
Aisle 6	17		
Average	**18.5**		

29.7%

FEHR & PEERS
TRANSPORTATION CONSULTANTS

BY_____ DATE_____ CLIENT_____ SHEET NO._____ OF_____

CHECKED_____ DATE_____ JOB_____ JOB NO._____

Costco Gas

Irvine, CA 4:45 - 5:15 PM
8/13/19

	3 Pumps			2 Pumps			
	1	2	3	4	5	6	7	8
Cars	21	20	19		13	16	15	14

avg 20 avg 14.5

27.5 v.

General Observations

People go for shortest line regardless of pump #s

Queue 2.4 cars per lane

KITTELSON & ASSOCIATES
750 THE CITY DRIVE, SUITE 410
ORANGE, CA 92868
P 714.468.1997

TECHNICAL MEMORANDUM

Vallejo Costco

Costco Gasoline Considerations

Date: July 22, 2019 Project #:23764
To: Ellen Poling, Fehr & Peers
From: Chris Brehmer

Costco Wholesale is proposing to develop a new warehouse and Costco Gasoline on a property located along Admiral Callaghan Lane in Vallejo to replace an existing facility in the City. This memorandum provides information regarding Costco Gasoline fuel facility trip rates and on-site queuing.

We collected trip data (trip rate and trip type) at the Bellingham, Washington and Temecula, California 30-fueling position Costco Gasoline sites in late November and December 2018.

COSTCO GASOLINE FUEL STATION TRIP ESTIMATE

Table 1 below summarizes average trip rates for a 30-position Costco Gasoline fuel station based on the data collected in Bellingham and Temecula. The trip type data was derived from customer surveys conducted on the same day as the traffic counts were collected. The internalization rates shown reflect trips between the Costco Gasoline fuel station and the Costco warehouse.

Table 1: Average Trip Characteristics for a Costco Gasoline Fuel Station

Land Use	Weekday Daily Trip Rate (per fuel position)	Weekday AM Peak Hour of Adjacent Street Traffic Trip Rate (per fuel position)			Weekday PM Peak Hour of Adjacent Street Traffic Trip Rate (per fuel position)			Site Weekend Midday Peak Hour (per fuel position)		
		Total	In	Out	Total	In	Out	Total	In	Out
Costco Gasoline Fuel Station	286.9	14.3	50%	50%	23.3	50%	50%	26.8	50%	50%
Primary Trips	No Data	21%			20%			23%		
Internal Trips	No Data	0%			24%			30%		
Pass-by Trips	No Data	39%			28%			25%		
Diverted Trips	No Data	40%			28%			22%		

Source: Kittelson & Associates, Inc. 2019

COSTCO GASOLINE FUEL STATION QUEUING

Costco Gasoline queues (vehicles waiting on-site to access a fuel position) were observed from 11:00 AM to 6:00 PM on a mid-week day and from 11:00 AM to 2:00 PM on a Saturday. Table 2 summarizes

the observed minimum, average, maximum and 95th percentile vehicle queues[1]. As shown in Table 2, the highest recorded queue at either site was 26 vehicles and was observed during the weekend midday period.

Table 2: Costco Gasoline Fuel Queuing Observations

Site	Dates Collected	Size (# of fuel positions)	Weekday AM Peak Queue				Weekday PM Peak Queue				Weekend Midday Peak Queue			
			MIN	AVG	95th	MAX	MIN	AVG	95th	MAX	MIN	AVG	95th	MAX
Temecula, CA	12/8/2018, 12/11/2018	30	0	11	23	25	0	11	18	24	5	16	22	26
Bellingham, WA	11/29/2018, 12/1/2018	30	0	2	8	14	0	1	4	6	0	8	18	24
Average			0	7	16	20	0	6	11	15	3	12	20	25

Where: MIN = Minimum observed, AVG = Average observed , 95th = 95th percentile, MAX = Maximum observed

Please call me at 503-535-7433 if you have questions regarding this information.

[1] The 95th percentile queue is defined to be the queue length (in vehicles) that has only a 5-percent probability of being exceeded during the analysis period. The industry standard methodology for queuing analysis considers the 95th percentile queues.

KITTELSON & ASSOCIATES
750 THE CITY DRIVE, SUITE 410
ORANGE, CA 92868
P 714.468.1997

TECHNICAL MEMORANDUM

Vallejo Costco

Costco Trip Generation

Date: July 22, 2019 Project #:23764
To: Ellen Poling, Fehr & Peers
From: Chris Brehmer

Costco Wholesale is proposing to develop a new warehouse and Costco Gasoline on a property located along Admiral Callaghan Lane in Vallejo to replace an existing facility in the City. This memorandum provides an overview of trip generation rates and trip characteristics of other Costco Warehouses with fuel stations for informational purposes based on surveys of similar Costco locations.

COSTCO WHOLESALE TRIP CHARACTERISTICS

Costco Warehouse facilities are open to members only and operate seven days a week. Typically, the warehouse building is open to members weekdays between the hours of 10:00 AM and 8:30 PM. Weekend operating hours open to members are typically from 9:30 or 10:00 AM to 6:00 PM. The warehouses are typically closed on major holidays. Costco Gasoline fuel stations co-located on the site are typically open seven days a week between 5:00 AM and 10:00 PM.

Trip data has been collected at Costco Warehouses across the United States and documented that they typically generate higher traffic volumes than other commercial land uses with similar building sizes. In addition to the number of trips, the Costco trip generation database also documents trip type based on member survey information that provides the percentage of primary, pass-by, and diverted trips, as further described below.

- Primary Trips (an entirely new trip on the roadway system for the express purpose of driving to and from Costco),
- Pass-by Trips (existing trips that are on roadways adjacent to the site which allow the motorist to turn into the Costco development, and then continue on to their ultimate destination when their shopping is concluded), and
- Diverted Trips (existing trips on nearby roadways in which the motorist makes a decision to drive out-of-direction for a distance to stop at Costco, and when their shopping is concluded, continue on their trip to the ultimate destination).

TRIP GENERATION ESTIMATE

Trip generation studies were conducted at Costco Wholesale sites located across the western region of the United States using industry standard engineering practices consistent with guidance within the Institute of Transportation Engineers standard reference, *Trip Generation Handbook, 9th Edition* Volume 1. These cordon studies include 22 surveys of Costco Warehouses with Costco Gasoline fuel stations in California, Oregon, Washington, Montana, Utah, and Colorado.

The Costco Wholesale buildings surveyed range in size between 120,000 square feet and 162,115 square feet, with an average size of 143,782 square feet and had Costco Gasoline fuel stations. As a result, the Costco Wholesale trip generation rates inherently account for Costco Gasoline fuel station trips within the overall rate. Table 1 summarizes the average trip rates recorded.

Table 1: Average Trip Characteristics for a Costco Warehouse with Fuel Station

Land Use	Weekday Daily Trip Rate (per KSF)	Weekday PM Peak Hour of Adjacent Street Traffic Trip Rate (per KSF)			Weekend Midday Peak Hour (per KSF)		
		Total	In	Out	Total	In	Out
Costco Warehouse With Fuel Station	79.27	7.17	49%	51.5%	9.79	51%	49%
Primary Trips	No Data		35%			50%	
Pass-by Trips	No Data		33%			29%	
Diverted Trips	No Data		32%			21%	

KSF: Thousand square feet
Source: Kittelson & Associates, Inc. 2019

Please call me at 503-535-7433 if you have questions regarding this information.

KITTELSON & ASSOCIATES

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TECHNICAL MEMORANDUM

Vallejo Costco

Costco Trip Generation

Date:	September 13, 2019	Project #:23764
To:	Ellen Poling, Fehr & Peers	
From:	Chris Brehmer	

Costco Wholesale is proposing to develop a new warehouse and Costco Gasoline on property located along Admiral Callaghan Lane in Vallejo to replace an existing facility in the City. We understand that Fehr & Peers has obtained traffic counts at the existing Warehouse and Gasoline facilities in order to help quantify the impacts associated with the proposed relocation. Additionally, we understand that you are interested in quantifying these impacts by using the data collected to develop a ratio of trips per square feet of the Costco Warehouse building size that can be applied to the new site.

For the purposes of trip generation, a number of variables related to the size of a land use are often evaluated to determine the appropriate surrogate for trips. Depending on the land use under consideration, these can range from building size, number of residential units, number of employees, number of hospital beds, student enrollment, etc. To help understand the appropriate variable for estimating the potential trips associated with the relocation of the existing Costco facilities a short-distance from the existing site, we worked with Costco to obtain information about average customer counts[1] and building size statistics at 13 California Costco warehouse sites that were expanded or relocated between 2003 and 2019.

For each site, we reviewed the customer count data associated with the 2 – 3 year time period prior to the expansion/relocation and compared it to the 2 – 3 year time period after the new Warehouse site was opened to the membership (one site only had two years of data post expansion/relocation due to their relatively recent relocation in 2017; all others had more). Two of the 13 sites had Costco Gasoline prior to the expansion/relocation and 11 did not. Each site has unique circumstances based on the local market, location, and presence or absence of competitors (including other Costco sites) so the data should be considered as informational to help inform the analyses rather than directly predictive or proportional to the conditions in Vallejo.

[1] Customer counts reflects the total number of customer card swipes at the Costco Warehouse and the Costco Gasoline

Based on our review of the data, the following general trends were observed:

- Of the two sites that had a Costco Warehouse and a Costco Gasoline on-site before expansion and/or relocation:
  - The after-expansion customer count (accounting for the Warehouse and Gasoline uses) increased the pre-expansion customer count by an average factor of 1.16;
  - The after-expansion warehouse size increased the pre-expansion size by an average factor of 1.17; and,
  - The average size of the warehouse expansion was approximately 22,300 square feet.
- Of the 11 sites that had a Costco Warehouse but no Costco Gasoline before expansion and/or relocation:
  - The after expansion customer count increased the pre-expansion customer count by an average factor of 1.20;
  - The after expansion warehouse size increased the pre-expansion size by an average factor of 1.22;
  - The average size of the warehouse expansion was approximately 27,600 square feet; and,
  - For the sites with fuel after the expansion was complete, the number of Costco Gasoline fuel positions provided varied between 12 and 24.

As would be intuitively expected, Costco Warehouse sites that added Costco Gasoline in addition to the warehouse expansion realized a higher average customer increase than those that already offered Costco Gasoline prior to expansion/relocation.

We trust you will be able to use the information above to determine how/whether applying the existing trip data count data collected at the existing Vallejo Costco site relative to the change in warehouse building size may be applicable and reasonable to understand the potential future site trip generation.

Please call me at 503-535-7433 if you have questions or if you would like to discuss.

Appendix K

Potable Water Demand Projections; and
Cooke Property Sewer Evaluation; and
Sanitary Sewer Capacity Calculations

WEST YOST ASSOCIATES
Consulting Engineers



TECHNICAL MEMORANDUM

DATE: January 31, 2019 Project No.: 021-60-18-07
SENT VIA: EMAIL

TO: Jim Templeton, PE, MacKay & Somps

CC: Jeb Elmore, Lewis Management Corp.

FROM: Jim Connell, PE, RCE #63052

REVIEWED BY: Amy Kwong, PE, RCE #73213

SUBJECT: Fairview at Northgate – Potable Water Demand Projections

The purpose of this technical memorandum (TM) is to summarize the findings and conclusions of an evaluation of the potable water demands for the Fairview at Northgate development project (Project). The evaluation is described through the following sections:

- Background
- Estimated Water Demands
- Determination of WSA Requirement

BACKGROUND

The proposed Project is located within a suburban and urban environment in the City of Vallejo (City). The proposed Project is bound on the north by Turner Parkway, to the east by Foothill Drive with a residential area, to the south by Sundance Apartments and Avery Greene Honda, and to the west by Admiral Callaghan Lane and I-80. Currently the proposed Project area encompasses approximately 51.3 acres of undeveloped vacant land. The site location and proposed land uses are shown in Figure 1.

The Project is planned to include commercial, residential, parks, and open space land uses. The commercial area, to be located on the western side of the site, will be approximately 21.8 acres. The commercial area will consist of four buildings to the north and a Costco to the south. The residential area, to be located on the eastern side of the site, will be approximately 22.6 acres. The residential area will consist of 178 single family residential dwelling units (DU). Through the middle of the site there will be approximately 5.6 acres of open space. The park areas will total approximately 1.3 acres and be located in the middle of the site and interspersed through the residential area. The proposed land uses and the number of DU or meters for the Project are shown in Table 1.

Table 1. Proposed Land Uses for the Project[a]

Proposed Land Use	Approximate Area, acres	Number of Dwelling Units or Meters
Single Family Residential	22.6	178 DU
Commercial	21.8	5 Meters
Park[b]	1.3	2 Meters
Open Space	5.6	0 Meters
Total	51.3	

(a) Land use area data based on OverallSitePlan, dated September 2018.
(b) Park area based on Project Description, received November 20, 2018.

ESTIMATED WATER DEMANDS

The demands for the proposed Project were projected using two methods. The first method was based on the water demand projection method documented in Appendix B of the City's 2015 Urban Water Management Plan (2015 UWMP)[1]. The second method substituted customized projections for Costco and irrigation as described below, but otherwise used the 2015 UWMP demand projection method for the other remaining land uses.

Method 1

Method 1 water demand projections were based on the method documented in Appendix B of the City's 2015 UWMP. West Yost Associates (West Yost) made some assumptions of the projected number of water meters for the commercial, park, and open space land uses. These assumptions should be confirmed.

West Yost adjusted the land use-based water demand factors listed 2015 UWMP Appendix B to account for water savings and other factors that were accounted for in the 2015 UWMP Appendix B after the initial demand projection. This adjustment was completed by adjusting weather normalized values using the 2040 adjusted baseline values, as documented in 2015 UWMP Appendix B. After the adjusted demands were calculated, an unaccounted-for water value of 10 percent was added, as documented in the 2015 UWMP Appendix B. The Method 1 water demand projection is summarized in Table 2.

[1] 2nd Draft City of Vallejo Retail Water Demand Forecast, M.CUBED, July 28, 2015.

Table 2. Proposed Project Demands - 2015 UWMP (Method 1)

Proposed Land Use	Quantity, units[a]	Adjusted Annual Demand Factor, units[b]	Projected Water Demand, AFY[c]
Single Family Residential	178 DU	84 CCF/DU	34.3
Commercial	5 Meters	449 CCF/meter	5.2
Park	2 Meters	1,230 CCF/meter	5.6
Open Space	0 Meters	-	-
		Losses[d]	5
		Total	50
Single Family Residential[e]	500 (DU)	84	107

(a) Land use data based on OverallSitePlan, dated September 2018.
(b) From City's 2015 UWMP Appendix B. Baseline Demands are adjusted for plumbing code and appliance standards; implementation of demand management measures, real cost of water, and water loss management.
(c) AFY = Acre-feet per year.
(d) Losses assumed to be 10 percent based on Table 26 in 2015 UWMP Appendix B.
(e) Includes unaccounted-for water at 10 percent of supply.

The projected water demand using Method 1 is approximately 50 acre-feet per year (AFY), which is less than half of the 107 AFY demand projection for a 500-single family residential unit development.

Method 2

Method 2 water demand projections used the same assumptions and methodology as above, but with some refined assumptions for Costco and irrigation demands. Projecting commercial and irrigation demands based on CCF/meter may work for City-wide demand projections, but can be inaccurate for individual parcels. For example, commercial land use water demand factors are typically in the range of 0.1 to 0.3 gallons per day per square foot (gpd/SF) depending on the proposed use. The City's water demand factor of 449 CCF/meter works well for the Project's smaller buildings that range in size from 3,000 SF (0.3 gpd/SF) to 9,400 SF (0.1 gpd/SF), but does not work well for the proposed Costco building at 152,138 SF (0.006 gpd/SF). Therefore, instead of assuming one meter for the Costco water demand projection, historical water demands were received from a Costco representative for an existing warehouse to help refine demand projections for this Project.

For irrigation, it was assumed that 15 percent of the commercial land and all of the parks would be irrigated. To calculate the unit water demands for irrigation, the Model Water Efficient Landscape Ordinance (MWELO) AB 1881 was used, since that is the City's standard for landscape design. Using MWELO, the Maximum Applied Water Allowance (MAWA) for non-residential (commercial) and special landscape (park) areas per acre were calculated and are shown in Attachment A. The MAWA was then used to calculate the maximum water demands for commercial and park irrigation demands. The Method 2 water demand projection is summarized in Table 3.

Table 3. Proposed Project Demands - 2015 UWMP with Refined Costco and Irrigation Demands (Method 2)

Proposed Land Use	Quantity, Units[a]	Adjusted Annual Demand Factor, Units	Projected Water Demand, AFY[c]
Single Family Residential	178 DU	84 CCF/DU[b]	34.3
Commercial	4 Meter	449 CCF/Meter[b]	4.1
Costco[d]	1 Warehouse	4,027,820 gal/warehouse	12.4
Commercial Irrigation[e]	3.3 Acres	1.55 ac-ft/Acre	5.1
Park Irrigation[f]	1.3 Acres	3.44 ac-ft/Acre	4.5
Open Space	0 Meter	-	-
		Losses[g]	7
		Total	67
Single Family Residential[h]	500 DU	84 CCF/DU[b]	107

(a) Land use data based on OverallSitePlan, dated September 2018.
(b) From City's 2015 UWMP Appendix B. Baseline Demands are adjusted for plumbing code and appliance standards; implementation of demand management measures, real cost of water, and water loss management.
(c) AFY = Acre-feet per year.
(d) Provided by Costco on January 14, 2019.
(e) Assumes irrigation of 15 percent of commercial area will be irrigated and used MAWA non-residential values from Attachment A.
(f) Used MAWA special landscape values from Attachment A.
(g) Losses assumed to be 10 percent of supply based on Table 26 in 2015 UWMP Appendix B.
(h) Includes unaccounted-for water at 10 percent of supply.

The projected water demand using Method 2 is approximately 67 AFY, which is also less than the 107 AFY demand projection for a 500-single family residential unit development.

DETERMINATION OF WSA REQUIREMENT

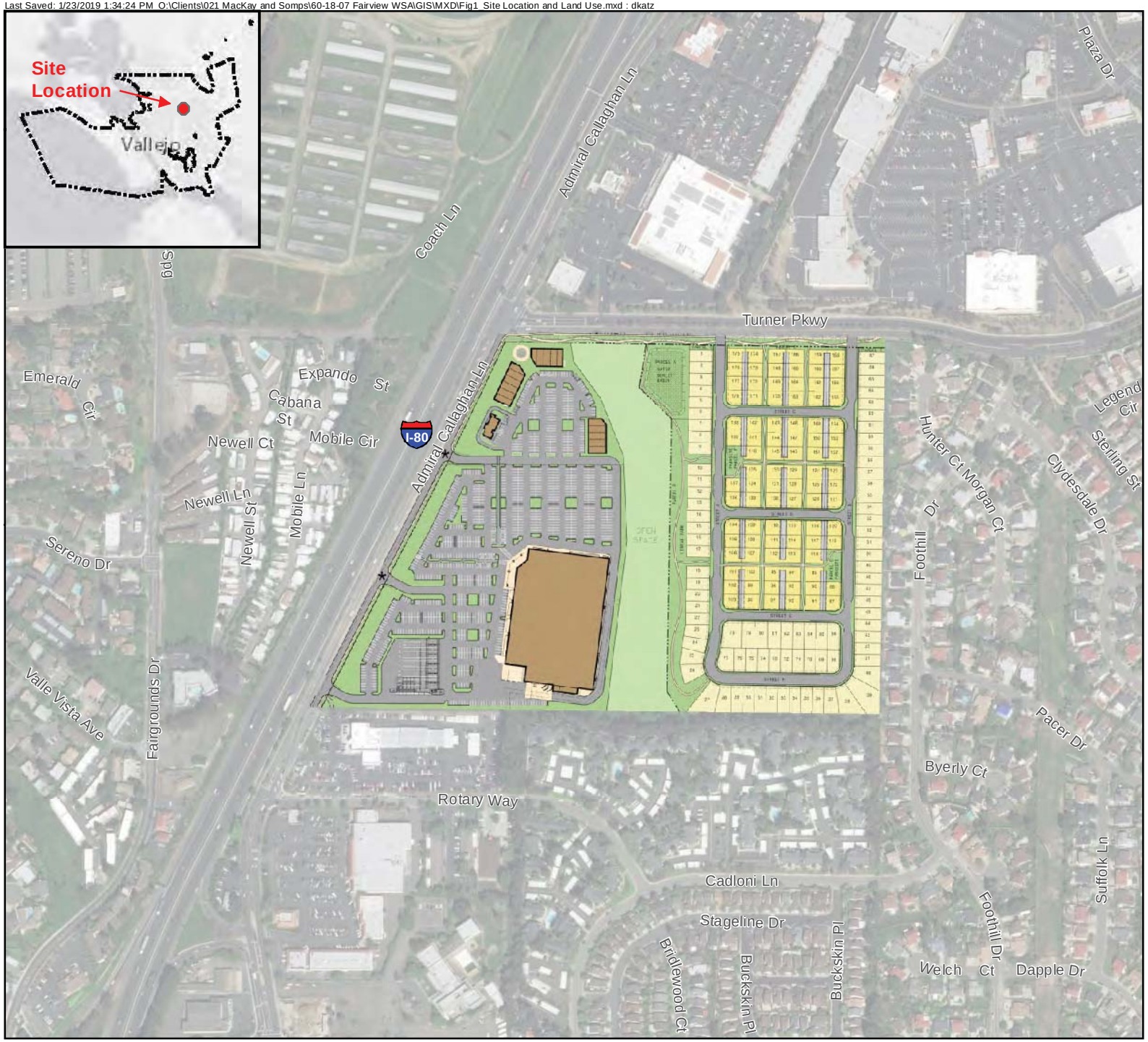
Water Code section 10910(a) lists the definition of a "Project" that would require preparation of a Water Supply Assessment (WSA) as follows.

> *Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.*
>
> *10912 (a) "Project" means any of the following:*
>
> *(1) A proposed residential development of more than 500 dwelling units.*
>
> *(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.*
>
> *(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.*
>
> *(4) A proposed hotel or motel, or both, having more than 500 rooms.*
>
> *(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.*
>
> *(6) A mixed-use project that includes one or more of the projects specified in this subdivision.*
>
> *(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.*

As indicated by the demand evaluation performed above, the Project does not meet the Water Code definition of a "Project" listed in numbers 1 through 7. Therefore, a WSA would not be required for the Project under California Water Code section 10910(a).

The water demand evaluation performed for the Project is based on the various assumptions stated above. If any of these items are changed or modified in any way, other than as described in this TM, additional evaluation may be required. In particular, assumptions were made regarding the number of water meters assigned to the commercial and irrigation uses within this Project. Those assumptions should be verified; however, such verification is unlikely to reverse the findings of this TM.

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N

0 250 500

Scale in Feet

Symbology

- Commercial
- Single Family Residential
- Single Family Residential
- Open Space
- Park

Notes:
1. Single family residential housing densities vary.
2. Land use image of Overall Site Plan dated September 2018 from MacKay & Somps on November 2018.

WEST YOST ASSOCIATES

Figure 1

Site Location and Land Use

MacKay & Somps
Fairview Water
Supply Assessment

ATTACHMENT A

Table A-1. Projected Unit Irrigation Demand for City of Vallejo[a]

Month	ETo,[b] in/mo	Rainfall,[b] in/mo	Eppt, in/mo	MAWA, Non-Residential[c]		MAWA, Special Landscape Areas[d]	
				MGY/acre	ac-ft/acre	MGY/acre	ac-ft/acre
January	1.4	1.87	0.47	0.01	0.04	0.03	0.08
February	1.9	2.91	0.73	0.01	0.04	0.03	0.10
March	3.1	1.99	0.50	0.03	0.10	0.07	0.21
April	4.5	1.18	0.30	0.05	0.16	0.11	0.35
May	5.6	0.65	0.16	0.07	0.20	0.15	0.45
June	6.0	0.05	0.01	0.07	0.22	0.16	0.50
July	6.2	0.00	0.00	0.08	0.23	0.17	0.51
August	5.5	0.01	0.00	0.07	0.21	0.15	0.46
September	4.5	0.07	0.02	0.05	0.17	0.12	0.37
October	3.2	0.40	0.10	0.04	0.12	0.08	0.26
November	1.8	1.60	0.40	0.02	0.05	0.04	0.11
December	1.2	2.51	0.63	0.01	0.02	0.01	0.04
Total	44.8	13.2	3.3	0.50	1.55	1.12	3.44

(a) Based on the California Code of Regulations, Title 23 Waters, Division 2 DWR, Chapter 2.7 Model Water Efficient Landscape Ordinance (MWELO), updated 2015.

(b) ETo and Average monthly rainfall based on City's 2015 UWMP, Table 3-1.

(c) Assumes the maximum allowable ETAF of 0.45 for non-residential areas.

(d) Assumes the maximum allowable ETAF of 1.0 for special landscape areas.

Notes:

Eppt = Effective Precipitation = 0.25 x Rainfall

ETo = Reference Evapotranspiration

ETAF = Evapotranspiration Adjustment Factor = (PF)/(Irrigation Efficiency)

LA = Landscape Area

MAWA = Maximum Applied Water Allowance, (ETo - Eppt) x 0.62 x [(ETAF x LA)]

PF = Plant Factor based on Hydrozone Area

WEST YOST ASSOCIATES

TECHNICAL MEMORANDUM

DATE: May 10, 2019

Project No.: 021-60-19-08
SENT VIA: EMAIL

TO: Jim Templeton, McKay & Somps Civil Engineers

FROM: Doug Moore, PE, RCE #58122

REVIEWED BY: Mark Kubik, PE, RCE #50963

SUBJECT: Cooke Property Sewer Evaluation



MacKay & Somps Civil Engineers, Inc. (Client) has requested that West Yost Associates (West Yost) evaluate the sanitary sewer impacts from the Cooke Property development (Project). The following sections summarize the technical evaluation performed by West Yost:

- Project Description
- Performance and Design Criteria
- Hydraulic Performance Evaluation
- Conclusions and Recommendations

PROJECT DESCRIPTION

The Project is in Vallejo, California and is located east of Interstate 80, near the intersection of Turner Parkway and Admiral Callaghan Lane. The Project will tie into the existing sanitary sewer system, which is owned and operated by Vallejo Flood and Wastewater District (District). The Project will have both commercial and residential land uses. The commercial land use is approximately 18 acres and will include a Costco and various other retail stores. The sewer lines for the commercial buildings will tie into the existing 18-inch diameter pipeline running through the property at sewer maintenance hole 203127. A portion of the existing sewer will be rerouted around the Costco building. The Project will also have approximately 24 acres of residential land use with 175 dwelling units. The proposed residential area sewer and will connect to the existing 12-inch diameter sewer along Turner Parkway, north of the Project (sewer maintenance hole 203071).

PERFORMANCE AND DESIGN CRITERIA

Per the District's Engineering Design Standards and Policies, the peak water surface elevation shall not exceed the ground surface elevation (to prevent sanitary sewer overflows).

HYDRAULIC PERFORMANCE EVALUATION

West Yost used the District's sanitary sewer model to evaluate the sewer impacts of the Project. The Client provided West Yost with sewer flow rates for the Project as summarized below:

- Residential Area Wastewater Flow Estimate:
  - Residential Average Dry Weather Flow (ADWF) = 37,800 gallons per day (gpd) (based on District's standards)
  - Peak Sanitary Flow (PSF) = 102,752 gpd (based on the District's peaking factor equation)
  - Peak Infiltration and Inflow (I&I) = 14,280 gpd (based on the District's I&I factor of 600 gpd per acre)
  - Peak Wet Weather Flow (PWWF) = 117,032 gpd (0.18 cubic feet per second (cfs))
- Commercial Area Wastewater Flow Estimate:
  - Costco ADWF = 7,824 gpd
  - Other commercial buildings ADWF = 2,443 gpd
  - Total commercial ADWF = 10,267 gpd
  - PSF = 27,909 gpd (based on the District's peaking factor equation)
  - Peak I&I = 10,608 gpd (based on the District's I&I factor of 600 gpd per acre)
  - PWWF = 38,517 gpd (0.06 cfs)

West Yost verified the residential flow estimate was consistent with the District's flow estimating standards. However, the District does not have an ADWF flow factor for commercial areas. Consequently, the Client's flow estimate was checked using a commercial area flow factor of 900 gpd per acre (from Dublin San Ramon Services District 2017 Collection System Master Plan), as summarized below:

- Commercial Area Wastewater Flow Estimate:
  - Total commercial area ADWF = 15,912 gpd (17.68 acres times 900 gpd per acre)
  - PSF = 43,253 gpd (based on the District's peaking factor equation)
  - Peak I&I = 10,608 (based on the District's I&I factor of 600 gpd per acre)
  - PWWF = 53,861 gpd (0.08 cfs)

For the model evaluation of potential sewer impacts, the residential flow estimate and the more conservative commercial flow estimate of 53,861 gpd were used.

West Yost selected key locations, shown on Figure 1, in the District's model with the highest chance of a sanitary sewer overflow to evaluate and assess if the District's criteria is violated with the addition of the Project's wastewater flows.

Hydraulic Model Update

Using a wastewater and I&I flow distribution spreadsheet developed by West Yost, sanitary flow and I&I hydrographs for the residential and commercial areas were developed, as shown on Figures 2 and 3. West Yost applied the Project's hydrographs to the connection points for the Project. West Yost increased the length of the on-site 18-inch sewer by 160 feet to account for rerouting the sewer around the Costco building.

Hydraulic Analysis

Table 1 summarizes Pre-Project and Post-Project WSEs, sewer invert elevations, and maintenance hole rim elevations at key locations in the model. The model results have typically (in past studies) shown variations in maximum water levels of 0.1 to 0.2 feet that appear to be due to minor changes in the timing of peak flows or are model anomalies. The decrease in water levels shown in Table 1 are attributed to the changes in peak flow timing or model anomalies. The key locations are areas with the highest probability of a sanitary sewer overflow (where the sewer is relatively shallow compared to the sewer depths upstream and downstream of the key locations). Nodes 103053, 301174, and 104024 show the water level exceeding the ground level both before and after the Project (shaded yellow in Table 1). However, at maintenance hole 301174, the maintenance hole lid is bolted to the maintenance hole with water tight lid, so there would be no overflow at this location. The sewer maintenance hole lids are not bolted at maintenance hole 104024, so there is risk of an overflow; however, the Project does not cause an increase in the WSE at these locations.

Table 1. Water Surface Elevation (WSE) Summary

Node ID	Location	Sewer Invert Elevation, feet	Maintenance Hole Rim Elevation, feet	Pre-Project WSE, feet	Post-Project WSE, feet	Change in WSE[(a)], feet	Freeboard, feet
401126	Upstream of Project. Redwood Parkway, just east of Skyline Drive	116.5	120.9	117.0	117.0	0.0	3.8
203127	At Project Site where Costco to connect	84.9	99.2	86.1	86.1	0.0	13.1
203100	Middle of the Project; Downstream of Costco Tie-In	82.4	89.6	83.4	83.4	0.0	6.2
104069	North end of Lake Chabot, to the west of the theme park	45.9	52.0	47.5	47.6	0.1	4.4
103053	Ifland Way, between Broadway Street and Sonoma Boulevard	0.2	8.6	10.0	9.7	-0.2	-1.1
3016603	Upstream of the Pump Station; South of Austin Creek	-12.2	6.2	3.1	2.9	-0.2	3.4
301095	Downstream of the Pump Station	23.2	40.6	25.9	25.9	0.0	14.7
301174[(b)]	Intersection of Lighthouse Drive and Wilson Avenue	13.9	18.7	19.4	19.4	0.0	-0.7
502923	At Treatment Plant	-11.1	6.7	-4.3	-4.3	0.0	11.0
203071	Turner Parkway, between I-80 and Foothill Drive. Location of Residential Connection	90.8	101.9	91.7	92.0	0.3	10.0
203056	Along Admiral Callaghan Lane, north of Turner Parkway	87.4	96.7	88.0	88.1	0.1	8.6
203084	North of Coach Lane and Newell Street	81.3	86.0	81.8	81.8	0.0	4.2
203024	West of Griffith Drive and Sage Street	88.7	96.6	89.6	89.6	0.0	7.0
104024	Near Intersection of Railroad and Lewis Brown Drive	12.5	18.3	20.4	20.4	0.0	-2.1
104256	Hobbs Ave and Diamond Ave	13.2	24.7	17.5	17.3	-0.2	7.3
1036618	Lewis Brown Drive, near the Sonoma Boulevard Overpass	-8.6	10.7	7.5	7.2	-0.3	3.5
301082P	Along Sacramento Street, southeast of Daniels Avenue and Sacramento Street	-7.6	7.5	4.2	4.0	-0.2	3.5

Note: Yellow shading indicates WSE exceeds the maintenance hole rim.
(a) Change in WSE = Post-Project WSE – Pre-Project WSE
(b) This maintenance hole is sealed so the negative freeboard does not represent a sewer overflow.

Table 2 summarizes the Pre-Project and Post-Project PWWFs at six locations in the model. In general, the discharge through each pipeline increases due to the Project.

Table 2. PWWF Summary

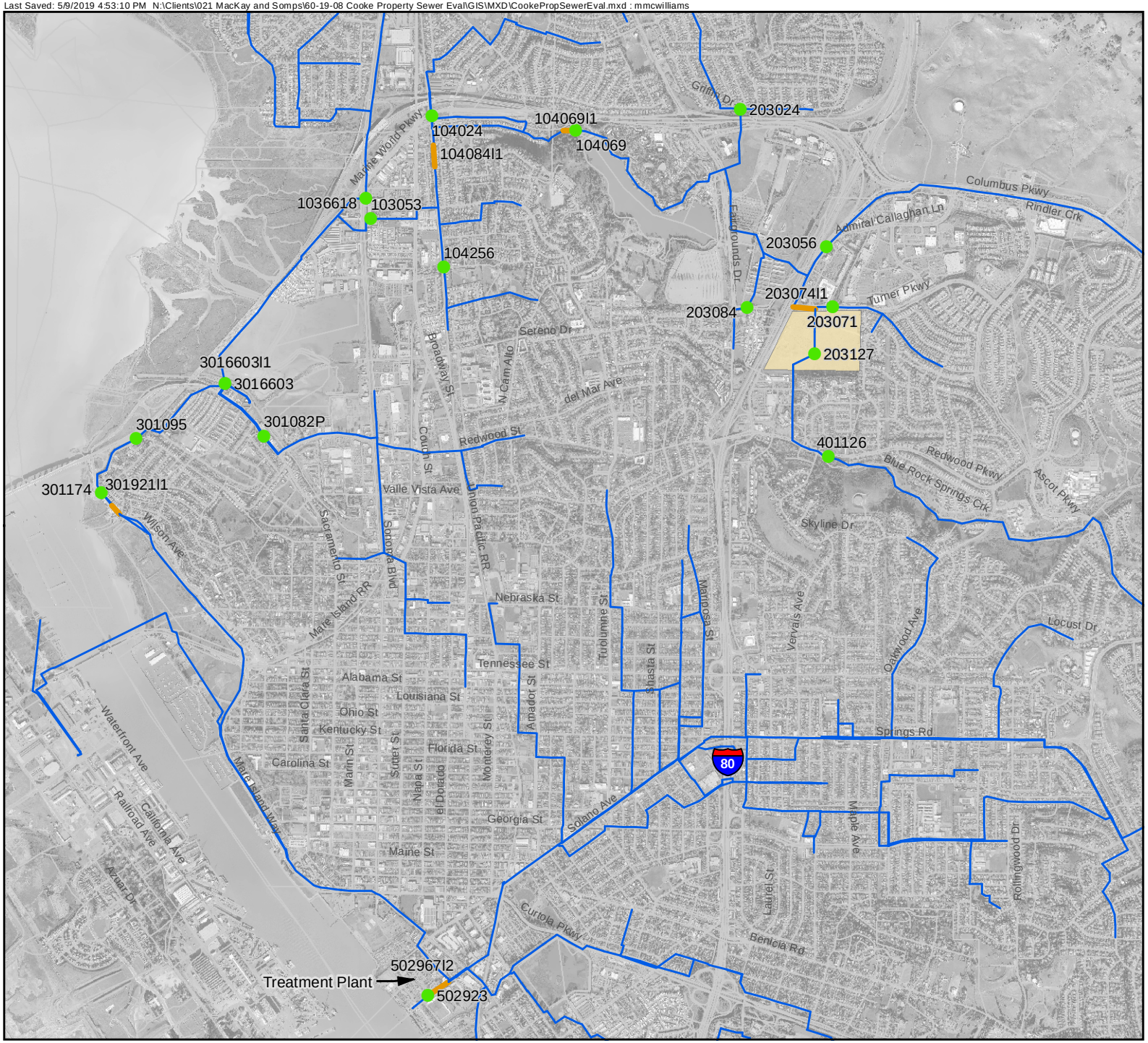
Link ID	Location	Pre-Project PWWF, cfs	Post-Project PWWF, cfs	Change in PWWF[(a)], cfs
203074l1	Downstream of Project, east of intersection of Admiral Callaghan Lane and Turner Parkway	6.36	6.58	0.22
104069l1	Downstream of Node 104069 at Lake Chabot	10.49	10.66	0.17
104084l1	Along railroad track, parallel to intersection of Encerti Avenue and Lofas Place	17.15	17.42	0.27
3016603l1	Upstream of pump station, parallel to Austin Creek	32.68	32.59	-0.10
301921l1	Along Wilson Avenue, between Lighthouse Drive and Sims Avenue	26.35	26.35	0.00
502967l2	Along Ryder Street, directly upstream of the treatment plant	134.55	134.69	0.14

(a) Change in Discharge = Post-Project Discharge – Pre-Project Discharge

CONCLUSIONS AND RECOMMENDATIONS

The Project is expected to increase the District's ADWF by 53,712 gpd, PSF by 146,005 gpd, and PWWF by 24,888 gpd. Results from the hydraulic performance indicate that the Project will not result in new or increased sanitary sewer overflows within the District's modeled system.

Last Saved: 5/9/2019 4:53:10 PM N:\Clients\021 MacKay and Somps\60-19-08 Cooke Property Sewer Eval\GIS\MXD\CookePropSewerEval.mxd : mmcwilliams



N

0 1,500 3,000

Scale in Feet

Symbology

- Manholes with Summarized WSE (Table 1)
- Pipeline
- Pipeline with Summarized Flow (Table 2)
- Cooke Property

WEST YOST ASSOCIATES

Figure 1

Key Locations

MacKay & Somps
Civil Engineers, Inc
Cooke Property
Sewer Evaluation

Figure 2. Cooke Property Residential Hydrographs

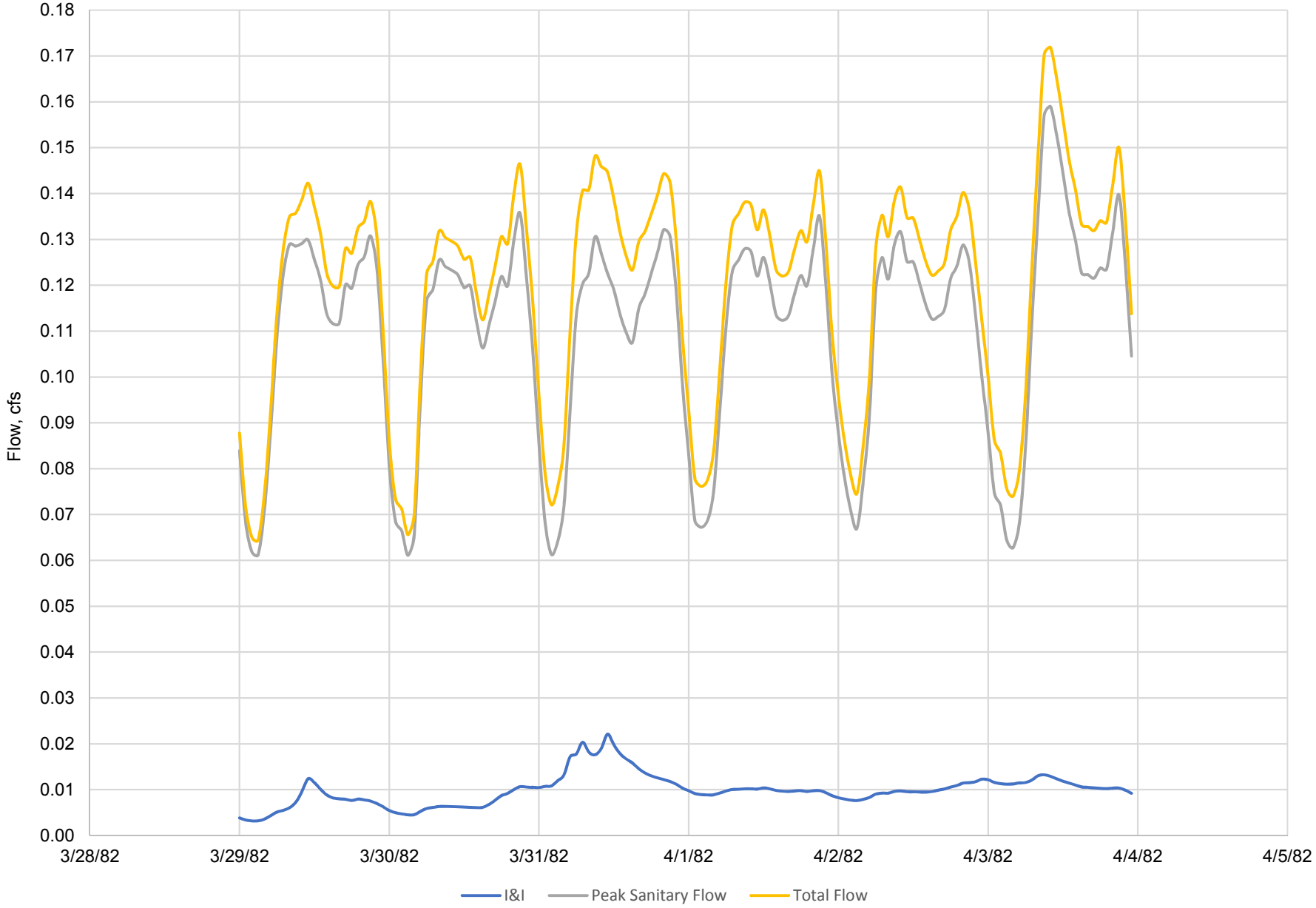
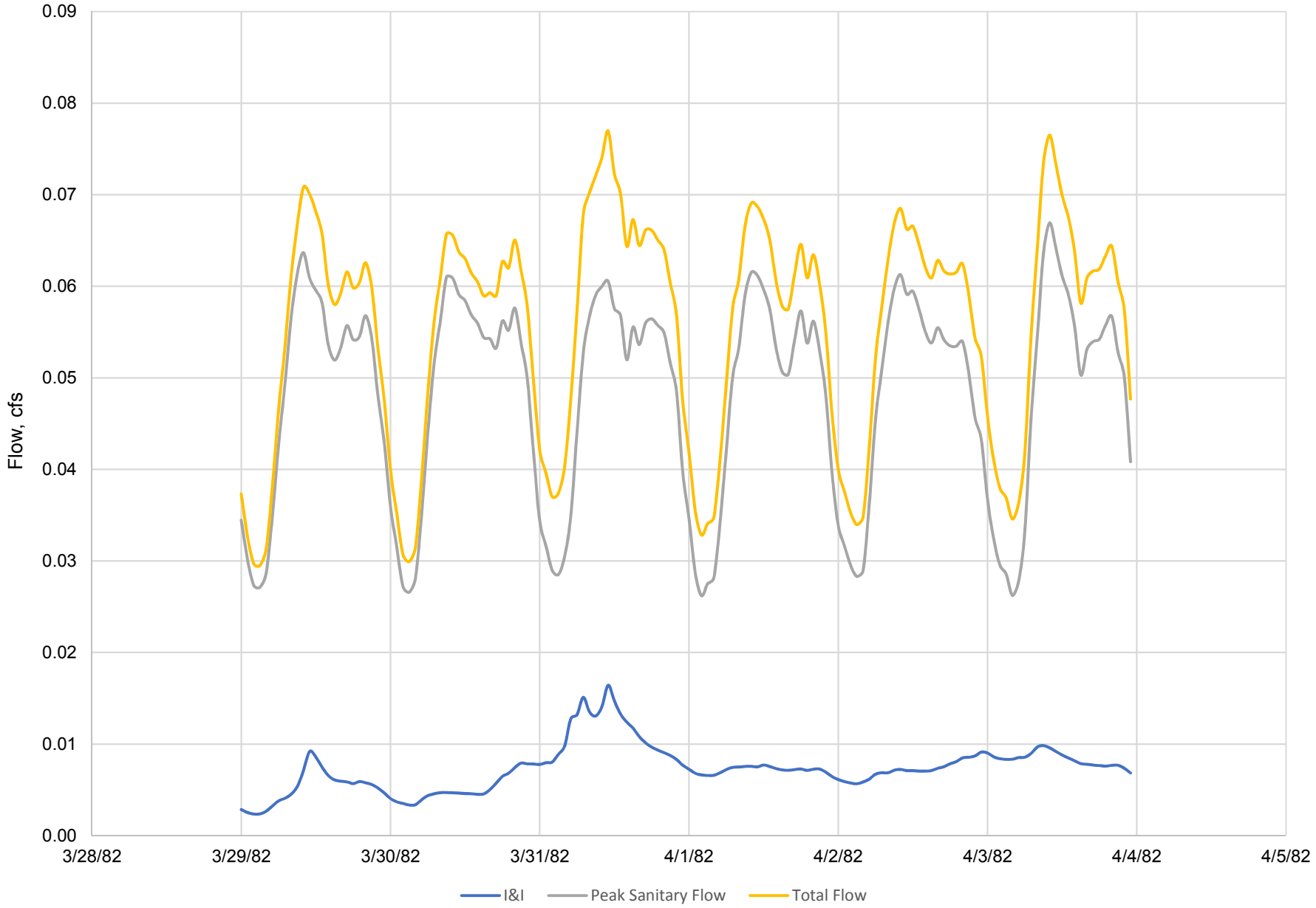


Figure 3. Cooke Property Commercial Hydrographs



SANITARY SEWER CAPACITY CALCULATIONS

Sanitary Sewer Capacity Analysis:

Per Vallejo Sanitation and Flood Control District Engineering Design Standards and Policies, dated May, 2002 Peak Sanitary Flow (PSF) is calculated by the following formula (See Exhibit A):

(1) $PSF = (SF)^{0.97}\ (e)^{0.33}$ for average sanitary flow $\geq$ 0.1 mgd

(2) PSF = (SF) (e) Average sanitary flow $\leq$ 0.1 mgd

Where PSF = peak sanitary flow, mgd or gd

SF = average sanitary flow, mgd or gd

e = natural log (2.7183)



For Commercial Use:

A. COSTCO Building –

Average daily flow = 7,824 gd (Information provided by Shay Reed with COSTCO Wholesale, via e-mail dated 1/14/19, per Exhibit B)

Since 7,824 gd < 0.1 mgd

PSF = (SF) (e)

PSF = (7,824) (2.7183)

PSF = 21,267.98 gd use 21,268 gd

B. Shops and Retail Buildings, see Exhibit D

The building area is = 27,490 SF

Assumed land use co-efficient of 0.006 cfs/acre (per National Clay Pipe Institute Manual) for general commercial (per Exhibit C).

Average daily flow = (0.006 ck/26) (27,490 sf) (1ac/43560 sf) (1mgd/1.55 cfs)
(1,000,000 gd/1mgd)

Average daily flow = 2,442.90 gd < 0.1 mgd

PSF = (SF) (e)

PSF = (2,442.90) (2.7183)

PSF = 6,640.54 gd, use 6,641 gd

Since all the buildings are clustered on one site,

PSF total = PSF for COSTCO + PSF for Shops and Retail + Infiltration

Infiltration = 600 gpd/acre per Exhibit A

Commercial site area = 769,980 sf = 17.68 acre (per Exhibit D)

Infiltration = (600 gpd) (17.68 acre) = 10,608 gd acre = 10,608 gd (Exhibit A)

Therefore, PSF Total = 21,268 + 6,641 + 10,608 = 38,517 gd

For Residential Use:

No. of Planner Residential Units (RI) = 175 units, (per Exhibit B)

Average Daily Discharge = 80 gallons/person/day (per Exhibit A)

Average day for residential = 20 gallons/person/day for commercial (per Exhibit A)

Where average family unit = 2.7 persons/unit (per Exhibit A)

Average daily discharge = (175 units) (2.7 person/unit) (80 gallons/person/day)

Average daily discharge = 37,800 gd < 0.1 mgd

PSF = (SF) (e)

PSF = (37,800) (2.7183)

PSF = 102,751.74 gd day use 102,752 gd

PSF Total = PSF Residential + Infiltration

Infiltration = 600 gpd/acre (per Exhibit A)

Residential site area = 23.8 acre

Infiltration = (600 gd/acre) (28.8 acre)

Therefore, PSF total = PSF Residential + Infiltration

PSF Total = 102,752 + 14,280

PSF Total = 117,032 gd. day

Final Result for Peak Sanitary Flow (PSF):

PSF for Commercial site = 30,381 gd

PSF for Residential site = 117,032 gd

(6) In flood hazard areas, new and/or rehabilitated sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.

(E) **General Sanitary Sewer Hydraulic and Capacity Design**

(1) Population density for computing contributing sewage to the system shall be based on predicted population densities determined and zoned by the City of Vallejo Planning Department and/or Solano County Planning Department.

(2) Average family unit = 2.7 persons per unit

(3) Average daily discharge = 80 gallons per person per day (residential); 20 gallons per person per day (employment, commercial)

(4) Peak sanitary flow is calculated by the following formula:
If the average sanitary flow is equal to or greater than 0.1 mgd, then the following formula should be used:

$$PSF = (SF)^{0.97} \times (e)^{0.33}$$

If the average sanitary flow is less than 0.1 mgd, then the following formula should be used:

$$PSF = (SF) \times (e)$$

where:

PSF = Peak Sanitary Flow, mgd
SF = Average Sanitary Flow, mgd
e = Natural log (2.7183)

Design flow shall be the Peak Sanitary Flow as derived above.

(5) Infiltration allowances shall be calculated as follows:
Areas sewered as of January 1970 - 4,000 gpd/acre.
New developments: 600 gpd/acre.

(6) Sewers shall be sized to provide a minimum velocity of two and one-half (2-1/2) feet per second when the sewer is flowing half full.

(7) Minimum slope requirements are necessary to assure self-cleaning and self-oxidizing velocities to avoid significant generation of hazardous odorous, and corrosive sulfur compounds. Where possible, use of the minimum slopes should be avoided and should not be construed as guidelines for system design. However, the District will accept the standard minimum slope. Standard minimum slopes used for sizing sewers shall be as follows:

Exhibit A

www.LewisGroupOfCompanies.com / www.LewisCareers.com

Follow Lewis Group of Companies
Linkedin Facebook Instagram Twitter

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From: Mike Okuma <mokuma@costco.com>
Sent: Monday, January 14, 2019 4:04 PM
To: Walt Mitchell <Walt.Mitchell@lewismc.com>
Subject: Fwd: Costco Vallejo

Walt

The following is the water

Sent from my iPhone

Begin forwarded message:

> **From:** Shay Reed <sreed@costco.com>
> **Date:** January 14, 2019 at 8:53:23 AM PST
> **To:** Mike Okuma <mokuma@costco.com>
> **Subject: Re: Costco Vallejo**

Water

Annual Water Consumption		
00028 - Laguna Niguel, 27972 Cabot Road		
	Consumption (US Gallons)	
Month		
September 2017	335,960	
October 2017	366,300	
November 2017	335,220	
December 2017	338,180	
January 2018	315,980	
February 2018	317,460	
March 2018	321,160	
April 2018	249,380	
May 2018	324,860	
June 2018	367,040	
July 2018	409,960	
August 2018	346,320	
	4,027,820	
Daily average	11,035	

SEWER

Date Date Flags Gallons

Exhibit B

9/5/2017	10/3/2017	ID	194,620
10/3/2017	11/7/2017	ID	250,120
11/7/2017	12/4/2017	ID	207,940
12/4/2017	1/2/2018	ID	229,400
1/2/2018	2/6/2018	ID	273,800
2/6/2018	3/6/2018	ID	231,620
3/6/2018	4/2/2018	ID	214,600
4/2/2018	5/1/2018	ID	242,720
5/1/2018	6/4/2018	ID	259,000
6/4/2018	7/3/2018	ID	235,320
7/3/2018	8/1/2018	ID	239,020
8/1/2018	9/5/2018	ID	277,500
	Total Sewer		2,855,660
	Daily		7,824

Shay Reed
Buyer: Energy, Utilities & Environmental Reporting
Costco Wholesale
425-313-6935

"Confidentiality Notice: This e-mail message, including any attachments, is for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply email and destroy all copies of the original message."

On Fri, Jan 4, 2019 at 2:58 PM Mike Okuma <mokuma@costco.com> wrote:

> Shay,
>
> Can you send send me the water and sewer demand for the existing warehouse? I need to get this to the developer for the DEIR
>
> ---------- Forwarded message ---------
> From: **Walt Mitchell** <Walt.Mitchell@lewismc.com>
> Date: Fri, Jan 4, 2019 at 8:08 AM
> Subject: Costco Vallejo
> To: Michael Okuma (mokuma@costco.com) <mokuma@costco.com>
> Cc: Jeb Elmore <Jeb.Elmore@lewismc.com>
>
> Michael, need to get the below info from you asap. We are trying to get all of the reports done for final acceptance of the applications from the City.
>
> Any questions please call.

NCPI

NATIONAL CLAY PIPE INSTITUTE

QUALITY • RESEARCH

CLAY PIPE
ENGINEERING MANUAL

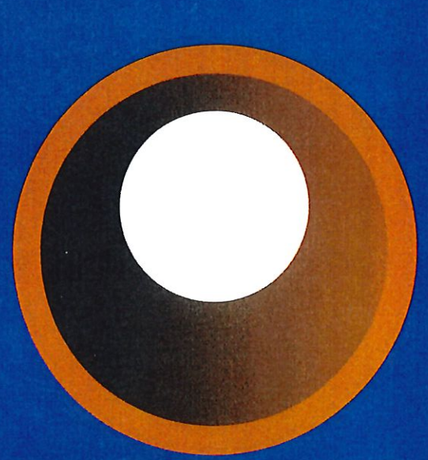


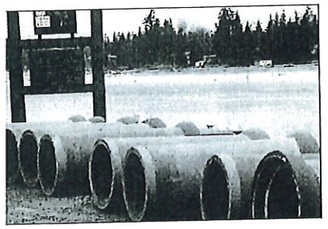
Exhibit C

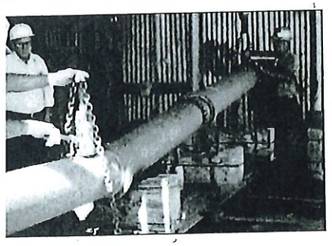
ınd or connections and improperly ›use laterals. Laterals frequently a total length greater than the ing system and may contribute ch as 90% of infiltration. House :tions should receive the same .cations, construction and inspec- ; public sewers.

e past, sewer designers allowed : amounts of infiltration to aid in ›orting solids. Infiltration must e kept to a minimum.

ıntages of Flexible pression Joints

›le compression joints conforming TM C 425 *Compression Joints for ied Clay Pipe and Fittings* have :ed all other forms of joining ed clay pipe. Obsolete field joining ns can be major contributors to :ation. The advantages of limiting :ation, exfiltration and roots while ding flexibility and durability have widely demonstrated. A tight and le joint is clearly desirable whether ;ewer is above or below ground :.





Summations of Flow

Starting at the upper end of the sewer under review, add projected average flows for 50 or more years in the future. As the projected average flows from each drainage area are totaled, multiply by the appropriate peak factor (page 17) to determine the peak flow for each reach of the line. These values are the design capacities for the proposed sewer (page 15).

Flow Monitoring

A sewer flow monitoring program is necessary to determine when existing sewers will reach hydraulic design capacity. Monitoring methods vary from high water markers that record maximum depths to gaging with hand held mechanical tools or electronic devices. With a history of flow data, projections can forecast the year the peak flow will reach the design capacity of the sewer.

Check adjacent population, gagings, water consumption, rainfall and any other available data to determine if the measured quantity of flow is reasonable. If adjacent measurements or the estimate is greatly different from the gaged amount, the cause should be identified and corrected before proceeding with a relief sewer. With a long range projection of peak flow based on population and a short range projection based on past gagings, a reasonable estimate utilizing both can be made. As new or more reliable information becomes available, the projection should be updated. Planning for relief sewers must begin with sufficient lead time before the projection reaches the design capacity of the sewer.

Sewer line modeling computer programs are available to analyze existing systems and establish quantities for the design of relief sewers.

LAND USE COEFFICIENTS

LAND USE	ABR.	AVERAGE COEFFICIENTS		
High Density R4, R5	H.D.	140 People/Acre	(100 gcd)	.0217 cfs/Acre
Medium Density R3	M.D.	75 People/Acre	(100 gcd)	.0116 cfs/Acre
Low Density RS, R1, R2	L.D.	20 People/Acre	(100 gcd)	.0031 cfs/Acre
Suburban RA, RE	Sub	10 People/Acre	(100 gcd)	.0016 cfs/Acre
Hillside	H.S.	7 People/Acre	(100 gcd)	.0011 cfs/Acre
Agriculture A1, A2	Agr	2.5 People/Acre	(100 gcd)	.0004 cfs/Acre
Light Industry CM, M1, M2	Lt	0.008 cfs/Acre		
Heavy Industry M3	Hvy	0.008 cfs/Acre		
General Commercial 2, 3, 5	Gen	0.006 cfs/Acre		
Limited Commercial CR, 1, 2	Ltd	0.006 cfs/Acre		
Hospital	H	500 gal/day/hosp. bed		
School	S	0.062 cfs/School		
University or College	U	0.371 cfs/Univ.		
Civic or Admin. Center	C.C.	0.006 cfs/Acre		
Airport	A	0.001 cfs/Acre		
Park	P	0.0003 cfs/Acre		
Future Park	F.P.	0.0003 cfs/Acre		
Golf	G	0.0003 cfs/Acre		
Cemetery	C	0		
Reservoir	R	0		
Public Works	W	0		
Open Space	O.S.	0		

Values should be verified or adjusted based on flow studies of the area if available.



PROJECT SUMMARY:

LAND USE:
RESIDENTIAL - 23.8± AC
COMMERCIAL - 21.8± AC
OPEN SPACE - 5.7± AC
TOTAL - 51.3± AC

RESIDENTIAL SUMMARY:

LOT COUNT:
86 - 42'x85' SINGLE FAMILY LOTS
92 - 50'x60' ALLEY-LOADED LOTS
~~178~~ 175 - TOTAL LOTS

COMMERCIAL SUMMARY:

MAJOR RETAILER: 152,138± SF
SHOPS & RETAIL: 27,490± SF

* SIGNALIZED INTERSECTION

FOR COMMERCIAL SITE AREA (FOR INFILTRATION)

$A_I = (21.8\ AC)\left(\frac{43,560\ SF}{1\ AC}\right) - 152,138\ SF$

$- 27,490\ SF$

$A_I = 769,980\ SF$

$A_I = 17.68\ ACRES$



NORTH
0 50 100 200
SCALE: 1"=100'

Exhibit D

OVERALL SITE PLAN
FAIRVIEW at NORTHGATE
Vallejo, California

C.1
SEPTEMBER 2018

GATEWAY PLAZA PHASE III
59 SD 44

TURNER PARKWAY

PARCEL E

PARCEL D

PARCEL F

PARCEL G

PARCEL C

PARCEL A

WATER QUALITY BASIN

LINIER PARK

OPEN SPACE

195

982'

179

158'

150'

QUAIL RIDGE CONDOMINIUMS LOT 1
44 SD 88

0 30 60 120
SCALE: 1"=60'

NORTH

Exhibit E

DIMENSIONED SITE PLAN
FAIRVIEW at NORTHGATE
Vallejo, California

C.2.1