THE TRUE LIFE COMPANIES
CALTRANS DEVELOPMENT PROJECT
INFILL ENVIRONMENTAL CHECKLIST

HAYWARD, CALIFORNIA

LSA

September 2019

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CALTRANS DEVELOPMENT PROJECT
INFILL ENVIRONMENTAL CHECKLIST

HAYWARD, CALIFORNIA

Submitted to:

City of Hayward
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Hayward, California 94541

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Project No. HAY1701.06

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September 2019

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LIST OF ABBREVIATIONS AND ACRONYMS

µg/m^3	micrograms per cubic meter
a.m.	morning
ACTC	Alameda County Transportation Commission
ADT	Average daily traffic
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BMPs	Best Management Practices
CalEEMod	California Emissions Estimator Model version 2016.3.2
Caltrans	California Department of Transportation
CAMUTCD	California Manual on Uniform Traffic Control Devices
CAP	Climate Action Plan
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CH_4	Methane
CN	Neighborhood Commercial
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO_2	Carbon dioxide
Corps	U.S. Army Corps of Engineers
CRRS	Community Risk Reduction Strategy
dB	decibel
dBA	A-weighted sound level
dbh	diameter at breast height
EPA	Environmental Protection Agency
ESA	Endangered Species Act

FEMA	Federal Emergency Management Agency
FGC	Fish and Game Code
FHWA	Federal Highway Administration
FHWA-RD-77-108	FHWA Highway Traffic Noise Prediction Model
FIRM	Flood Insurance Rate Map
ft	foot/feet
FTA	Federal Transit Administration
General Plan EIR	2040 General Plan Draft Environmental Impact Report
GHG	greenhouse gas
GSAs	groundwater sustainability agencies
GWh	gigawatt-hours
GWP	Global Warming Potential
HCM	Highway Capacity Manual, 2000 Edition
HFCs	Hydrofluorocarbons
HRA	health risk assessment
HV	Heating and Ventilation
I-880	Interstate 880
in/sec	inches per second
IPaC	Information for Planning and Consultation
ITE	Institute of Transportation Engineers
kWh	kilowatt-hours
L_{dn}	day-night average level
L_{eq}	equivalent continuous sound level
L_{max}	Typical maximum construction equipment noise levels
LOS	level of service
LTCP	Low-Threat UST Closure Policy
MDR	Medium Density Residential (General Plan)
mpg	miles per gallon
MSL	mean sea level
MT	metric tons
N_2O	nitrous oxide

NO_2	nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
p.m.	afternoon/evening
Pb	lead
PD	Planned Development
PDAs	Priority Development Areas
PFCs	Perfluorocarbons
PM_{10}, $PM_{2.5}$	particulate matter
POTWs	publicly owned treatment works
PPV	peak particle velocity
project applicant	TTLC Management, Inc.
proposed project	TTLC – Caltrans Development Project
RM	Medium Density Residential (Zoning)
ROC	Retail and Office Commercial
RWQCB	Regional Water Quality Control Board
San Francisco MS4 Permit	San Francisco Region Municipal Regional Stormwater NPDES Permit
SF_6	Sulfur Hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SGMA	Sustainable Groundwater Management Act
SH BART/Mission Blvd SEIR	South Hayward BART/Mission Blvd Form-Based Code Final Supplemental Program Environmental Impact Report
SMU	Sustainable Mixed Use
SO_2	sulfur dioxide
SR-238	State Route 238
S-T4	South Hayward Form Based Code, T4
State Water Board	California State Water Resources Control Board
SU-30	single-unit trucks
SWPPP	Stormwater Pollution Prevention Plan
TACs	toxic air contaminants
TIA	Traffic Impact Analysis
USFWS	United States Fish and Wildlife Service

USGS	Unites States Geological Survey
USTs	underground storage tanks
VdB	vibration velocity decibels
VMT	vehicle miles traveled
VOC	volatile organic compound
Work Plan	Site Investigation Work Plan

1.0 INFILL ENVIRONMENTAL CHECKLIST

Pursuant to California Resources Code Sections 21083.3, 21094.5.5, and CEQA Guidelines Section 15183.3.

1. **Project Title:**

   The True Life Companies (TTLC) – Caltrans Development Project

2. **Lead Agency Name and Address:**

   City of Hayward
   Planning Division
   777 B Street
   Hayward, CA 94541

3. **Contact Person and Phone Number:**

   Leigha Schmidt, Senior Planner
   (510) 583-4113

4. **Project Location:**

   The project site is located in Hayward, Alameda County. Parcel 1 is located at 29212 Mission Boulevard (Assessor's Parcel Number [APN] 078C-0445-001-04) and Parcel 2 consists of a vacant parcel located north of Parcel 1 (no address, portion of APNs 078C-0461-10, -11, -12, -13, and -14).

5. **Project Sponsor's Name and Address:**

   Leah Beniston, TTLC Management, Inc.
   12647 Alcosta Boulevard, Suite 470
   San Ramon, CA 94583

6. **General Plan Designation:**

   Sustainable Mixed Use (SMU), Retail and Office Commercial (ROC), and Medium Density Residential (MDR)

7. **Zoning:**

   South Hayward (SH) Form Based Code, CN (Neighborhood Commercial) District and RM (Medium Density Residential) District

8. Prior Environmental Document(s):

City of Hayward 2040 General Plan Final Environmental Impact Report, May 2014, State Clearinghouse Number 2013082015 and South Hayward (SH) BART/Mission Blvd Form-Based Code (FBC) Final Supplemental Program EIR (SEIR), June 2011, State Clearinghouse Number 2005092093

9. Location of Prior Environmental Document(s):

City of Hayward Planning Division, 777 B Street, Hayward, CA 94541

10. Description of Project:

See Section 3.0, Project Description.

11. Surrounding Land Uses and Setting:

See Section 3.0, Project Description.

12. Other Public Agencies Whose Approval is Required:

Approvals and permits may be required from the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and San Francisco Regional Water Quality Control Board.

2.0 INFILL PERFORMANCE STANDARDS

California Environmental Quality Act (CEQA) Guidelines Section 15183.3(b) and CEQA Guidelines Appendix M establish eligibility requirements for projects to qualify as infill projects. The below information demonstrates that the proposed infill project satisfies the eligibility criteria of CEQA Guidelines Section 15183.3(b) as well as the performance standards in Appendix M.

2.1 CEQA GUIDELINES SECTION 15183.3(B)(1) CRITERIA

Be located in an urban area on a site that either has been previously developed or that adjoins existing qualified urban uses on at least 75 percent of the site's perimeter. For the purpose of this subdivision, "adjoin" means the infill project is immediately adjacent to qualified urban uses, or is only separated from such uses by an improved right-of-way.

The project site vicinity is characterized as urban and consists of a mix of residential, commercial, and open space uses. Although open space is currently the most prominent land use in the vicinity of the site, the area is transitioning to residential uses with the recent approvals of three new developments, including 59 residential units with 12 accessory dwelling units abutting the project site to the north, 203 condominium units abutting the project site to the south, and 472 attached and detached residential units across Mission Boulevard to the west of the project site. There is a mix of residential and commercial uses along Mission Boulevard to the north and south pf the project site.

2.2 CEQA GUIDELINES SECTION 15183.3(B)(2)

Satisfy the performance standards in Appendix M.

1. *Does the non-residential infill project include a renewable energy feature? If so, describe below. If not, explain below why it is not feasible to do so.*

According to Section IV(g) of CEQA Guidelines Appendix M, for mixed-use projects "…the performance standards in this section that apply to the predominant use shall govern the entire project." The predominant use is residential, and the proposed project is therefore not required to include on-site renewable power generation.

2. *If the project site is included on any list compiled pursuant to Section 65962.5 of the Government Code, either provide documentation of remediation or describe the recommendations provided in a preliminary endangerment assessment or comparable document that will be implemented as part of the project.*

The project site is included on a list compiled pursuant to Section 65962.5 of the Government Code. As discussed in Section 5.9, remediation has been completed, and the project site is eligible for case closure.

3. *If the infill project includes residential units located within 500 feet, or such distance that the local agency or local air district has determined is appropriate based on local conditions, of a high volume roadway or other significant source of air pollution, as defined in Appendix M, describe the measures that the project will implement to protect public health. Such measures may include policies and standards identified in the local general plan, specific plans, zoning code or community risk reduction plan, or measures recommended in a health risk assessment, to promote the protection of public health. Identify the policies or standards, or refer to the site-specific analysis, below.*

High-volume roadways are generally defined as freeways, highways, or urban roads with traffic volumes of at least 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. There are no major roadways with volumes greater than 100,000 vehicles per day within 1,000 feet of the project site. In addition, as described in the General Plan EIR's Community Risk Reduction Strategy, the project site is located within a low health risk exposure area. However, the General Plan EIR and SH BART/Mission Blvd SEIR consider Mission Boulevard, with an average annual daily traffic volume of approximately 68,000 vehicles, to be a source of toxic air contaminants (TACs). Residential uses on the project site would be located within less than 500 feet of this roadway. As discussed in Section 6.3.2.3 of the Infill Checklist included in Section 6.0 of this document, implementation of standard conditions of approval (SCA AIR-2) would ensure that appropriate measures are incorporated into the project design in order to maintain acceptable indoor and outdoor air quality standards and ensure that impacts related to long-term exposure of sensitive receptors to TACs is reduced to a less-than-significant level.

4. *For residential projects, the project satisfies which of the following?*

   ☐ *Located within a low vehicle travel area, as defined in Appendix M.*

   ☒ *Located within ½-mile of an existing major transit stop or an existing stop along a high-quality transit corridor.*

   ☐ *Consists of 100 or fewer units that are each affordable to low income households. (Attach evidence of legal commitment to ensure the continued availability and use of the housing units for lower income households, as defined in Section 50079.5 of the Health and Safety Code, for a period of at least 30 years, at monthly housing costs, as determined pursuant to Section 50053 of the Health and Safety Code.)*

The project site is located approximately 0.3 miles from the South Hayward Bay Area Rapid Transit (BART) Station, which qualifies as an Existing Major Transit Stop.

5. *For commercial projects with a single building floor-plate below 50,000 square feet, the project satisfies which of the following?*

   ☐ *Located within a low vehicle travel area, as defined in Appendix M.*

   ☐ *The project is within ½-mile of 1,800 dwelling units.*

This performance standard is not applicable. The proposed project would include 10,821 square feet of commercial development; however, the predominant use is residential. According to Section IV(g) of CEQA Guidelines Appendix M, for mixed-use projects "…the performance standards in this section that apply to the predominant use shall govern the entire project." Therefore, the requirements for commercial/retail projects do not apply.

6. *For office building projects, the project satisfies which of the following?*

   ☐ *Located within a low vehicle travel area, as defined in Appendix M.*

   ☐ *Located within ¼-mile of an existing major transit stop.*

This performance standard is not applicable. The proposed project does not include any office uses.

7. *For school projects, the project does all of the following:*

   ☐ *The project complies with the requirements in Sections 17213, 17213.1, and 17213.2 of the California Education Code.*

   ☐ *The project is an elementary school and is within 1 mile of 50 percent of the student population, or is a middle school or high school and is within 2 miles of 50 percent of the student population. Alternatively, the school is within ½-mile of an existing major transit stop or an existing stop along a high-quality transit corridor. (Attach map and methodology.)*

   ☐ *The project provides parking and storage for bicycles and scooters.*

This performance standard is not applicable. The proposed project is not a school project.

8. *For small walkable community projects, the project must be a residential project that has a density of at least eight units to the acre or a commercial project with a floor area ratio of at least 0.5, or both.*

This performance standard is not applicable. The proposed project is not a small walkable community project, as defined by CEQA Guidelines Section 15183.3(e)(6).

2.3 CEQA GUIDELINES SECTION 15183.3(B)(3)

Be consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy, except as provided in [the following] subdivisions […]. (The subdivisions as they are not applicable to the proposed project.)

The adopted Plan Bay Area (2040) serves as the Sustainable Communities Strategy (SCS) for the Bay Area, per Senate Bill 375. As defined by the Plan, Priority Development Areas (PDAs) are areas where new development will support the needs of residents and workers in a pedestrian-friendly environment served by transit. The proposed project is located within the "South Hayward BART" PDA, which is comprised of the Plan Area for the SH BART/Mission Blvd Specific Plan. The proposed project is consistent with the City of Hayward General Plan and Municipal Code, as discussed in Section 6.11 of this Infill Environmental Checklist.

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3.0 PROJECT DESCRIPTION

This chapter provides an overview of the proposed TTLC–Caltrans Development Project (project), including a description of existing conditions on and in the vicinity of the project site.

3.1 PROJECT AREA

The following sections describe the project site's regional and local context.

3.1.1 Project Location

The approximately 12.17-acre project site is located at and immediately adjacent to 29212 Mission Boulevard in the City of Hayward, Alameda County, between Tennyson Road and Alquire Parkway. The project site is comprised of two parcels of approximately 7.6 and 4.65 acres in size. The smaller of the two parcels (Parcel 1, which is located on the southern portion of the project site, is owned by TTLC Management, Inc. (project applicant) and generally slopes upwards to the east from the lowest and flattest area at the Mission Boulevard frontage. The larger of the two parcels (Parcel 2) is owned by the City (and is a former California Department of Transportation (Caltrans)[1] property) and is steeply sloping from the western boundary adjacent to Parcel 1 to the eastern boundary of the site fronting Tennyson Road. The project site is currently bound by Tennyson Road to the north, undeveloped land planned for residential development to the east, existing commercial uses and planned residential uses to the south, and commercial uses and Mission Boulevard to the west.

Regional access to the project site is provided by Interstate 880 (I-880), which is located approximately two miles west of the project site. Local access to the project site is provided by Mission Boulevard, which is also State Route 238 (SR 238). The South Hayward Bay Area Rapid Transit (BART) Station is located approximately 0.3 miles west of the project site. Figure 3-1 depicts the regional and local context of the project site. Figure 3-2 is an aerial view of the project site and its vicinity.

3.1.2 Existing Site Conditions

The project site is located on a generally southwest facing slope, with elevations ranging from approximately 31 feet above mean sea level (msl) at the southern corner of the site adjacent to Mission Boulevard to approximately 121 feet above msl at the northern corner of the site adjacent to Tennyson Road. The project site is currently vacant and largely covered in vegetation, including 13 trees. A portion of the former La Vista Quarry Access Road runs through the northern portion of the project site and remnants from previous development are present on the southern portion of Parcel 1. Existing conditions on the project site are shown in Figure 3-3.

[1] Note: Parcel 2 is made up of portions of five parcels (APNs 078C-0461-10, -11, -12, -13, and -14), but is referred to as a single parcel throughout this document for ease of reference.

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LEGEND

Project Site

FIGURE 3-1

N

0 1000 2000

FEET

SOURCE: ESRI World Map (05/2019).

The True Life Companies - Caltrans Development Project

Project Site and Vicinity Map

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-1.ai (9/3/19)

LSA

FIGURE 3-2

0 250 500
FEET

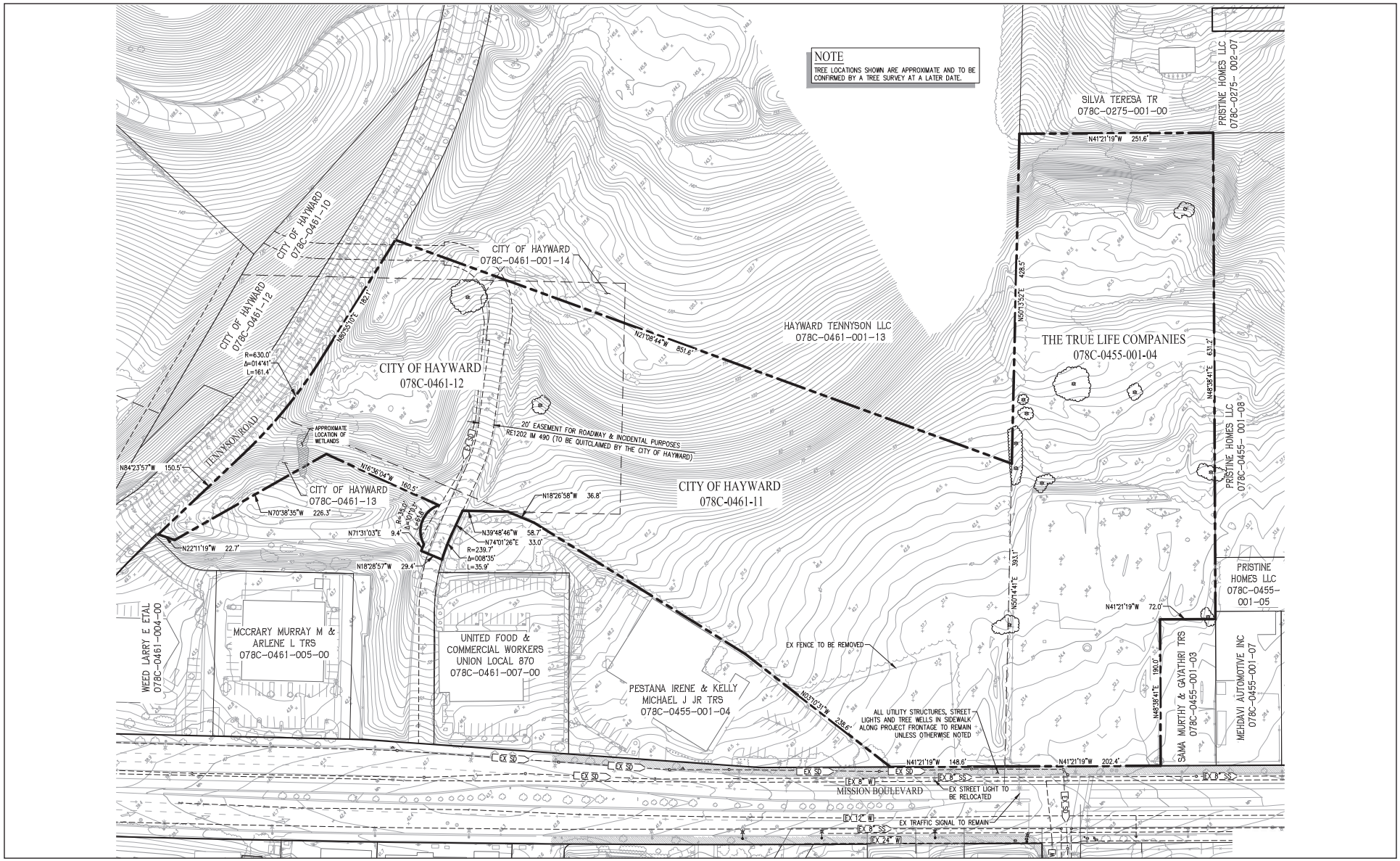
N

Project Site

The True Life Companies - Caltrans Development Project
Aerial Photograph and Surrounding Land Uses

SOURCES: GOOGLE EARTH, 3/28/18; LSA, 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-2.ai (9/3/19)



LSA

FIGURE 3-3

0 120 240
FEET

N

Project Site Boundary

The True Life Companies - Caltrans Development Project
Existing Site Conditions

SOURCES: TRUE LIFE COMPANIES; CBG CIVIL ENGINEERS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-3.ai (9/3/19)

The project site was previously located within the 1974 Alquist-Priolo Earthquake fault zone map. However, subsequent trenching investigations revealed that the potential earthquake fault does not appear to meet the definition of a sufficiently-active or well-defined fault such that zoning by the State of California is warranted, and the 1982 revised Alquist-Priolo Earthquake fault zone map no longer includes this trace.[2]

3.1.3 Surrounding Land Uses

The area surrounding the project site vicinity is characterized as urban and consists of a mix of residential, commercial, and open space uses. Although open space is currently the most prominent land use in the vicinity of the site, the area is transitioning to residential uses with the recent approvals of three new developments, as further discussed below.

- **North**. The project site is bound to the north by the new Tennyson Road Extension and the planned La Vista Park, an approximately 50-acre proposed park which would include recreational fields, picnic space, and an amphitheater, among other amenities. Further north of Tennyson Road are multi-family residential and commercial uses.

- **East**. To the east, the project site is bounded by the approved Ersted Development Project, which will include the construction of 59 attached single-family homes and 12 accessory dwelling units. Further to the north and east is the La Vista Residential Development, which will include 179 single-family units when complete. Southeast of the site are additional multi-family residential uses.

- **South**. The project site is bounded to the south by the recently-approved Mission Seniors project, which will include 203 condominium units once constructed. Further south are commercial uses fronting Mission Boulevard and multi-family residential uses.

- **West**. The project site is bounded by commercial uses and Mission Boulevard to the west, across which will be the approved Sohay Development, which will consist of 472 attached and detached residential units. Further west of Mission Boulevard are multi-family residential, hotel, and commercial uses, as well as the South Hayward BART station, approximately 0.3 miles from the site and accessible via Tennyson Road.

3.1.4 Regulatory Setting

Parcel 1 is designated as Sustainable Mixed Use (SMU) in the City's General Plan,[3] which allows a density between 4.3 and 100 dwelling units per acre, and is zoned South Hayward Form Based Code, T4 (S-T4).[4] Parcel 2 is designated as Retail and Office Commercial (ROC) and Medium Density Residential (MDR) in the City's General Plan, both allow for a density of up to 17.4 units per acre, and is zoned Neighborhood Commercial (CN) and Medium Density Residential (RM). In addition,

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2 Earth Systems Pacific, 2017. *Geologic Hazards Evaluation and Geotechnical Feasibility Study for the Proposed Multifamily Residential Development at 29212 Mission Boulevard, Hayward, California.* September 26.

3 Hayward, City of, 2014. *Hayward 2040 General Plan.* July.

4 Hayward, City of, 2016. City of Hayward Zoning (map). February.

Parcel 2 is subject to the SD-7 (Special Design Overlay District, Hayward Foothills Trail) District which calls for a multi-use trail to run east and north through Parcel 2 from Mission Boulevard to Tennyson Road.

3.2 PROPOSED PROJECT

The proposed project would include approval of a Purchase and Sale Agreement between the City and applicant to allow for the purchase of Parcel 2. The applicant would combine Parcel 2 with Parcel 1 and rezone the combined site to Planned Development (PD) District. The applicant is proposed to subdivide the site to develop 189 residential units with 66 for sale condominium units within two mixed-use buildings (referred to on plans as Buildings A and B) that would also contain 10,821 square feet of ground floor commercial space; and 123 townhome units within 23 buildings ranging from four to seven units each. The proposed buildings would vary in height, ranging from approximately 31 feet for the townhome buildings to approximately 65 feet for the mixed-use buildings. The proposed project would also include a number of community benefits, including an approximately 17,000 square foot dog park, an approximately 5,600-square-foot plaza and the extension of over 1,400 lineal feet of a multi-use trail. The sale and combination of parcels and subsequent zone change to the PD District is intended to address the unique and challenging development conditions created by the sites' limited frontage on Mission Boulevard, unstable geologic conditions, steep slopes to the east and north of the project site, and in order to maximize densities on the combined site. Table 3.A includes a summary of the parcels that make up the project site.

Table 3.A: Parcel Summary

Parcel	APN(s)	Size (acres)	Ownership	Existing		Proposed	
				General Plan	Zoning	General Plan	Zoning
1	078C-0455-001-04	4.65	TTLC	SMU	S-T4	SMU (no change)	PD
2	078C-0461-10, -11, -12, -13, -14	7.6	City/ Caltrans	ROC – 4.3 acres MDR – 3.3 acres	CN – 4.3 acres RM – 3.3 acres	ROC, MDR (no change)	PD

Source: City of Hayward (2019).
Notes: SMU = Sustainable Mixed Use; ROC = Retail and Office Commercial; MDR = Medium Density Residential; CN = Neighborhood Commercial; RM = Medium Density Residential; and S-T4 = South Hayward Form Based Code, T4

Figure 3-4 shows a conceptual site plan for the proposed project. Figure 3-5 shows the conceptual floor plan for Building A, and Figure 3-6 shows the conceptual floor plan for Building B. Figure 3-7 shows a representative conceptual floor plan for the townhome buildings, and Figure 3-8 through 3-10 show conceptual building elevations for both the mixed-use and townhome buildings. Figure 3-11 shows conceptual renderings of the proposed project.

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FIGURE 3-4

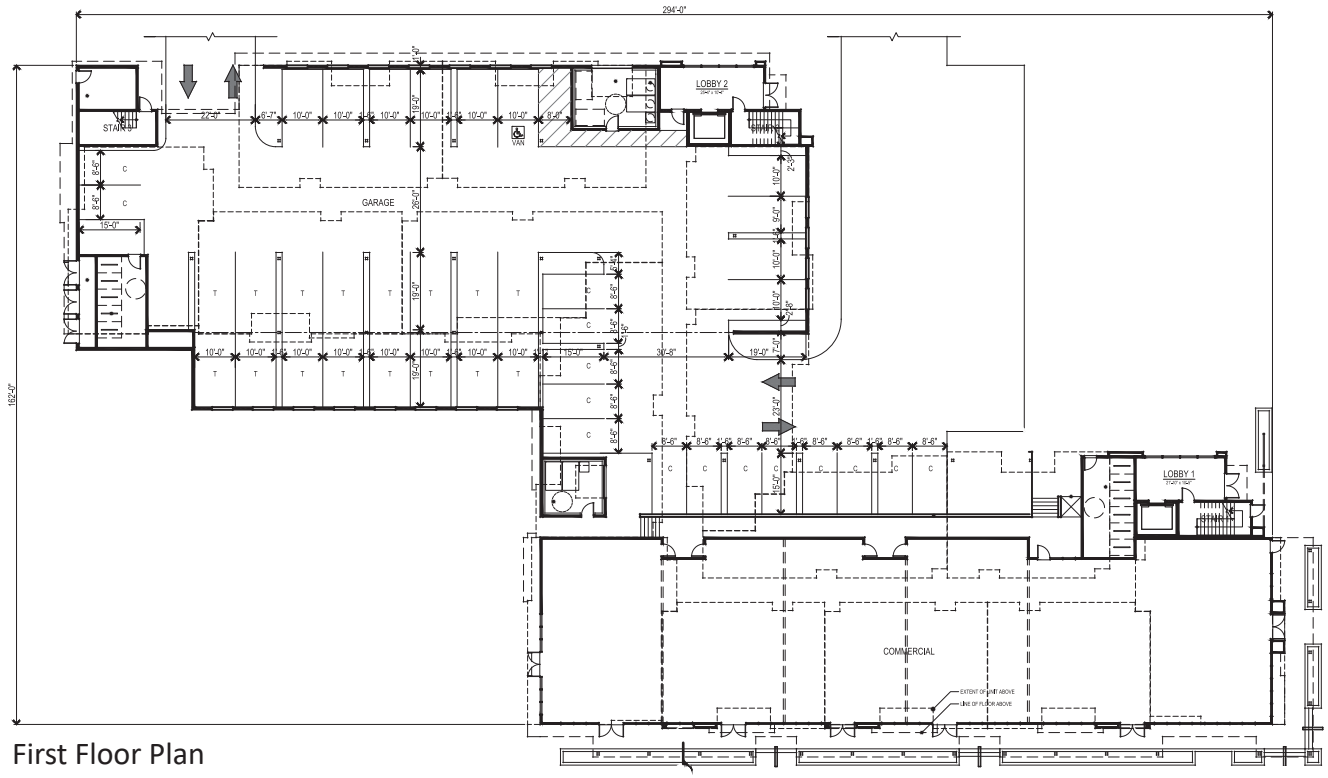
0 100 200
FEET

N

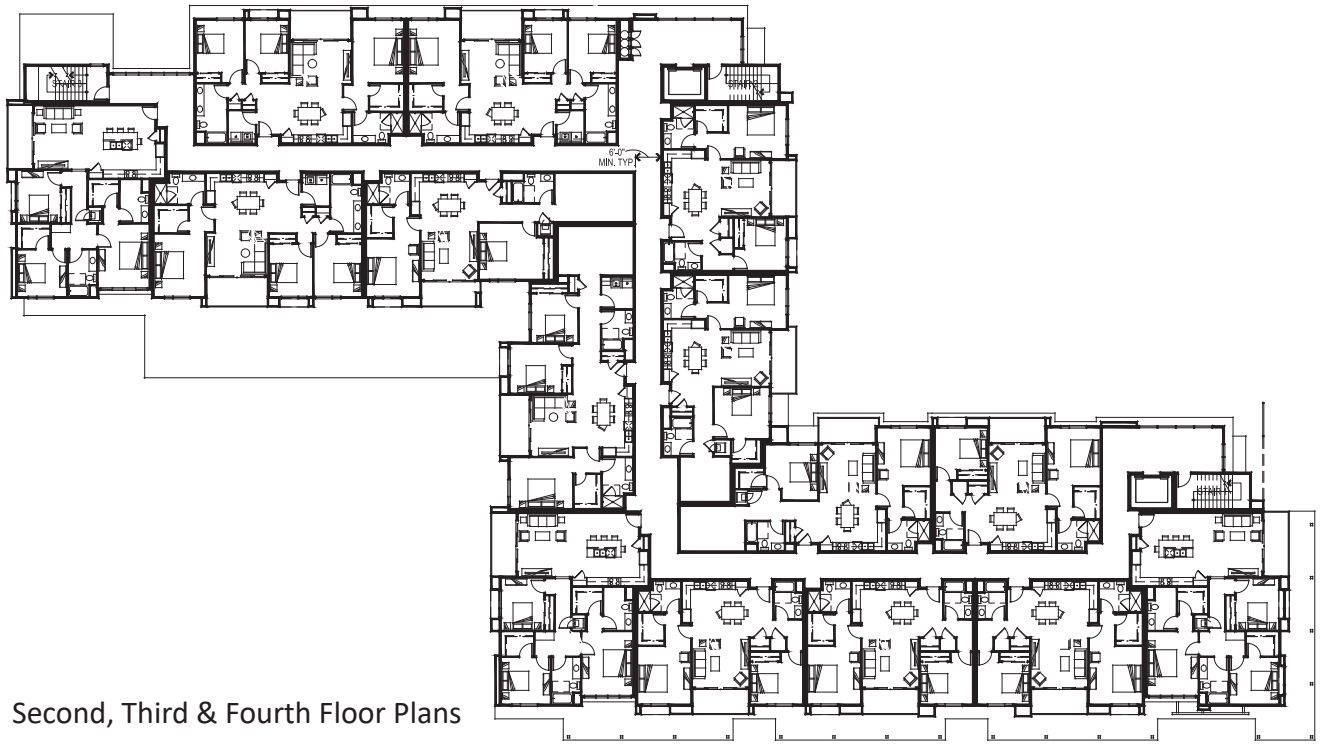
The True Life Companies - Caltrans Development Project
Conceptual Site Plan

SOURCES: TRUE LIFE COMPANIES; R3 STUDIOS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-4.ai (9/3/19)



First Floor Plan



Second, Third & Fourth Floor Plans

LSA

FIGURE 3-5

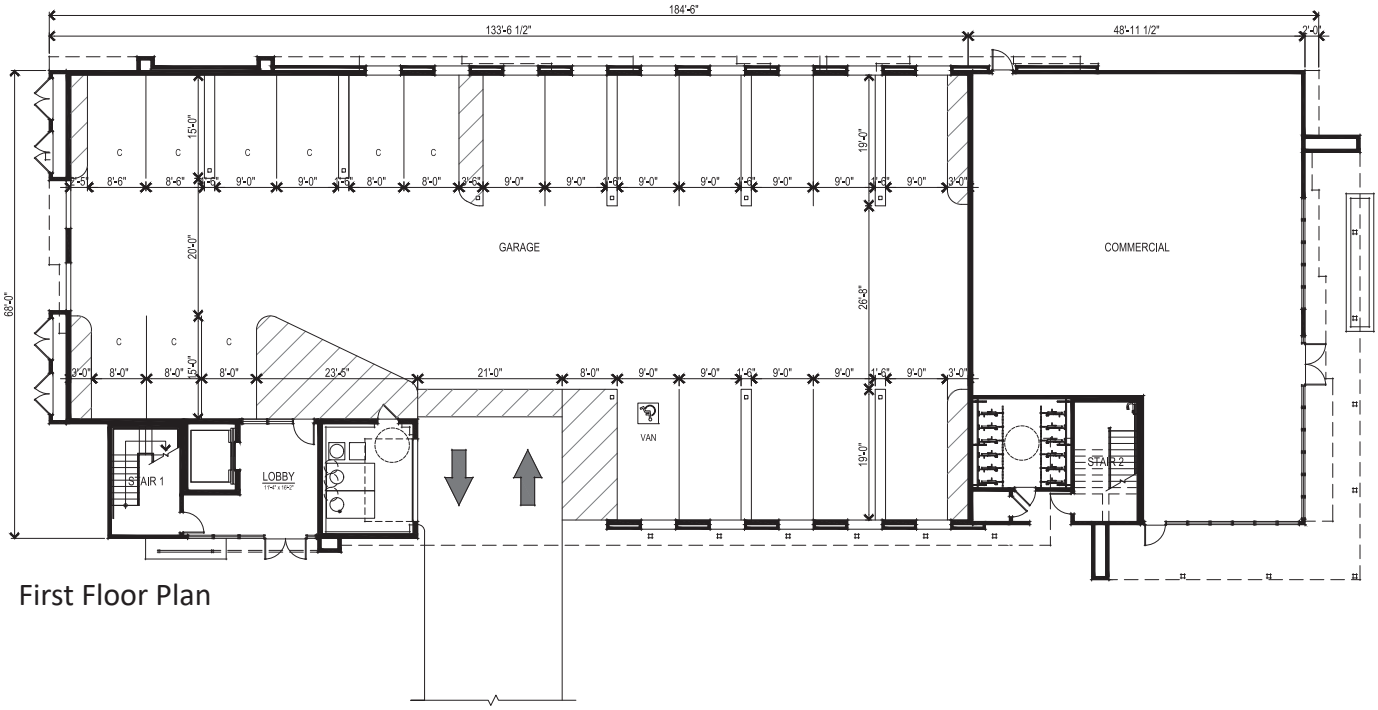
NOT TO SCALE

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

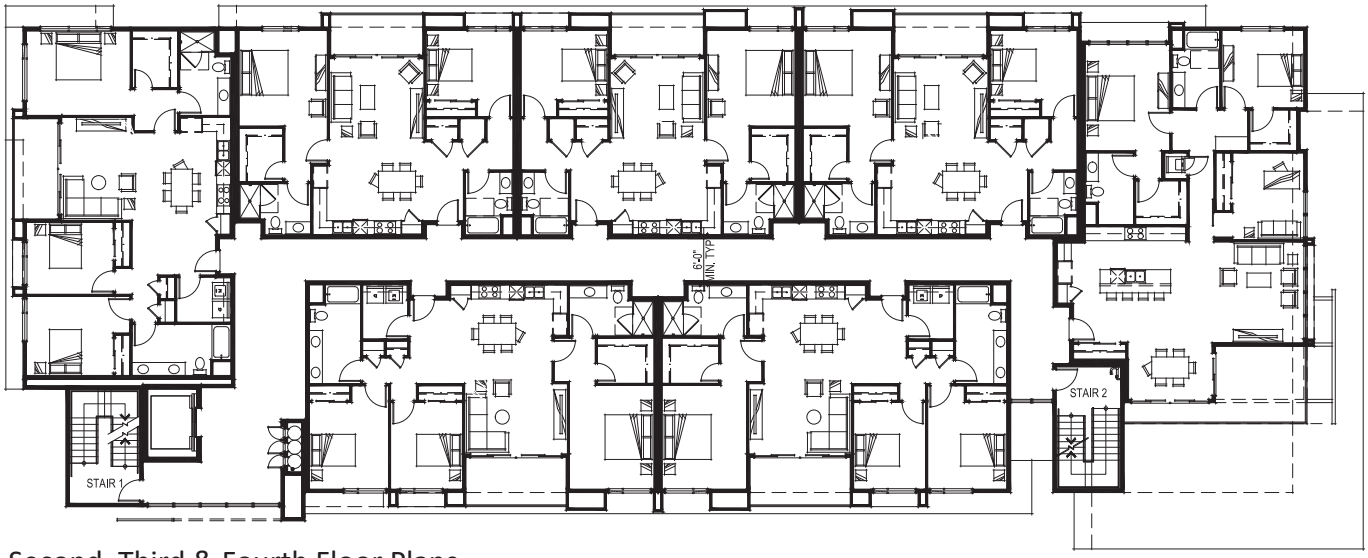
The True Life Companies - Caltrans Development Project

Conceptual Mixed Use Building A Floor Plans

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-5.ai (9/3/19)



First Floor Plan



Second, Third & Fourth Floor Plans

LSA

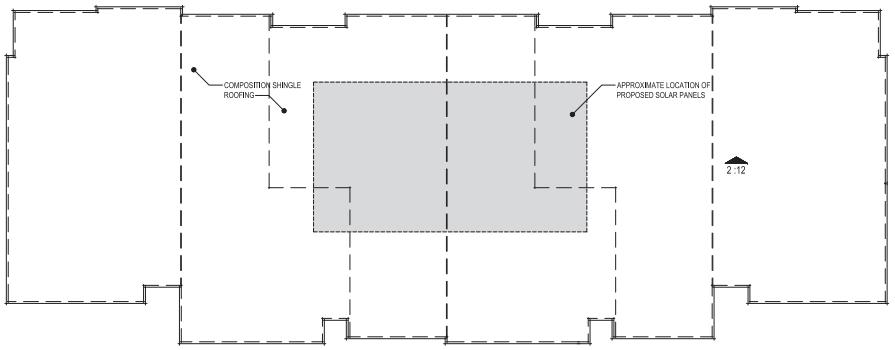
FIGURE 3-6

NOT TO SCALE

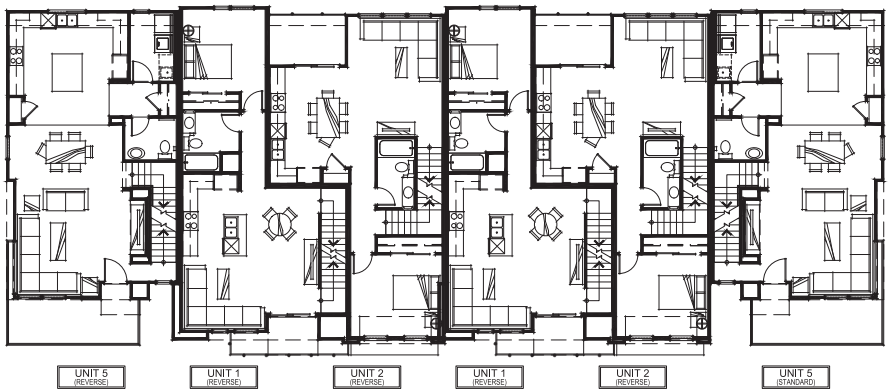
The True Life Companies - Caltrans Development Project
Conceptual Mixed Use Building B Floor Plans

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

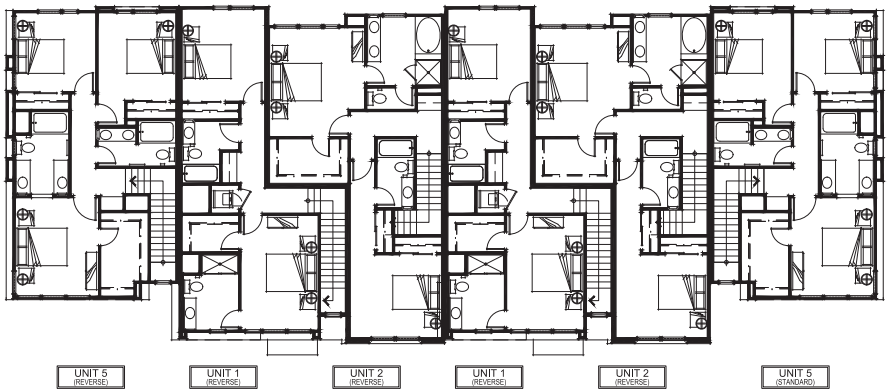
P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-6.ai (9/3/19)



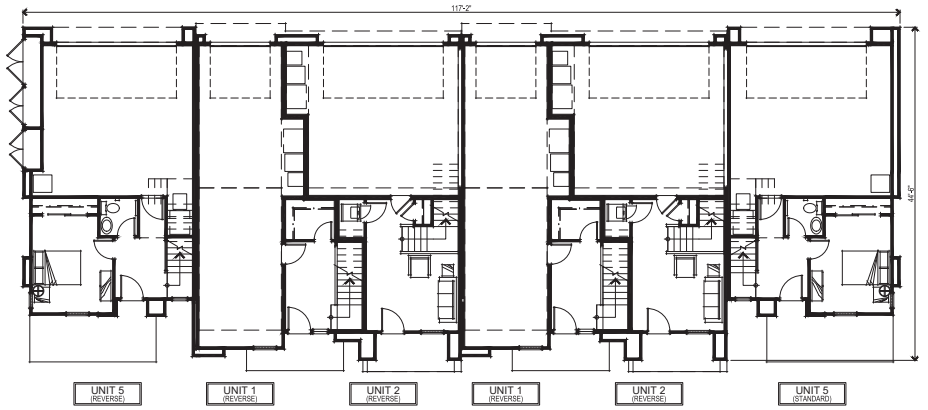
ROOF PLAN



SECOND FLOOR PLAN



THIRD FLOOR PLAN



FIRST FLOOR PLAN

LSA

FIGURE 3-7

NOT TO SCALE

The True Life Companies - Caltrans Development Project
Conceptual 6-Unit Townhome Buildings Floor Plans

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-7.ai (9/3/19)

LSA

FIGURE 3-8

NOT TO SCALE

The True Life Companies - Caltrans Development Project
Conceptual MIxed Use Buildings West Elevations

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-8.ai (9/3/19)

Left Elevation

Front Elevation

Right Elevation

Rear Elevation

LSA

FIGURE 3-9

NOT TO SCALE

The True Life Companies - Caltrans Development Project

Conceptual 6-Unit Townhome Building Elevation - Townhome Style A

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-9.ai (9/3/19)

Left Elevation

Front Elevation

Right Elevation

Rear Elevation

LSA

FIGURE 3-10

NOT TO SCALE

The True Life Companies - Caltrans Development Project

Conceptual 6-Unit Townhome Building Elevation - Townhome Style B

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-10.ai (9/3/19)

LSA

FIGURE 3-11

The True Life Companies - Caltrans Development Project
Conceptual Building Renderings

SOURCES: TRUE LIFE COMPANIES; SDG ARCHITECTS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-11.ai (9/3/19)

3.2.1 Building Program

As noted above, the proposed project would include two mixed-use buildings and 23 townhome buildings. Buildings A and B would be located along Mission Boulevard and the townhome units would be located to the east of the mixed-use buildings. Building A would be located on the southwest portion of Parcel 2. Building A would consist of 45 residential units, 24 of which would include two-bedrooms and 21 of which would include three-bedrooms, all ranging in size from approximately 1,127 square feet to 1,710 square feet. Building B would be located south of Building A on Parcel 1. Building B would consist of 21 residential units, 9 of which would be two-bedroom units, and 12 of which would be three-bedroom units, with the same size range as Building A. In addition, Building A would include 8,048 square feet of ground floor commercial area which could be used as a daycare or subdivided into multiple tenant spaces, and Building B would include one 2,773-square-foot tenant space, for a total of 10,821 square feet of commercial area on the project site. Commercial uses would be located on the ground level.

The townhome buildings would range in size from approximately 8,516 square feet to 13,356 square feet. Of the 23 proposed buildings, one building would include seven units, 14 buildings would include six units each, and eight buildings would include four units each, for a total of 123 units. The townhome units would range in size from 1,548 square feet to 1,970 square feet and would consist of 116 three-bedroom units and seven four-bedroom units.

3.2.2 Landscaping and Open Space

The proposed project would include approximately 41,594 square feet of common open space and approximately 11,271 square feet of private open space on the project site, for a total of approximately 52,865 square feet of open space. Common open space on the project site would consist of a few pocket parks scattered throughout the residential area, landscaped paseos, walkways between buildings, and rooftop decks on the mixed-use buildings. Private open space would consist of balconies within individual units.

In addition to common and private open space, the proposed project would also include a number of PD amenities throughout the site. An approximately 17,000-square-foot public dog park would be located on the northeastern portion of the project site. Building A would include an approximately 9,205-square-foot open space and landscaped area just north of the building, and an approximately 5,600-square-foot urban park would be located at the base of Building A. Two pedestrian plazas totaling approximately 4,000 square feet would be provided at the entrance to the project site at the southern portion of Parcel 1 and a small overlook area would be developed on the northern portion of Parcel 1 at the terminus of Street A. Several pocket park spaces would be scattered about the project site providing a wide variety of respite areas.

Finally, the proposed project would include a 12-foot-wide, approximately 1,400-foot-long easement running through the site for the extension of a multi-use trail. The trail easement would run along the eastern side of Buildings A and B and then would follow the new secondary access street out to Tennyson Road proposed as part of the project, as further described below.

3.2.3 Access, Circulation, and Parking

The project site would be accessed via a new curb cut along Mission Boulevard between Buildings A and B and a driveway along Tennyson Road, near the proposed dog park. These new driveways would provide access throughout the project site, which would include three new internal roadways, as shown in the conceptual site plan (Figure 3-4).

All of the buildings would include a parking garage with side by side or tandem two-car parking configurations. The townhome buildings would include garages for individual units, while Buildings A and B would include shared parking garages. On-street parking would also be provided within the project site adjacent to Buildings A and B. The proposed project would include 312 covered parking spaces and 33 on-street parking spaces for residential use, and 63 on-street parking spaces for commercial uses, for a total of 408 parking spaces on the project site. A total of 72 bicycle parking spaces would be provided throughout the site as well, with 38 designated for short-term use and 34 designated for long-term use.

3.2.4 Utilities and Infrastructure

The proposed project would require utility services including water, wastewater, storm drain, gas electrical, and telecommunications. The applicant is investigating the option to go all electric for the development which would eliminate the need to install gas lines to serve the project site. The proposed project would connect to existing utilities via tie-ins on Mission Boulevard, including a connection to either the 8- or 12-inch water line, the 8-inch wastewater line, and the 54-inch storm drain line.

The proposed project would result in an increase in impervious surface area on the project site. Roofs, roads, concrete driveways and other infrastructure would create approximately 289,973 square feet (approximately 6.7 acres) of impervious surface area, leaving 241,459 square feet (5.5 acres) of pervious surface area. The proposed project would include three bioretention areas within the site, two of which would be located in the eastern portion of Parcel 1 and would be approximately 5,148 square feet in size, and the third of which would be located in the northern portion of Parcel 2 and would be approximately 7,008 square feet in size.

3.2.5 Site Preparation and Construction

Subsurface excavations for the foundations and utilities would likely occur to a depth of 15 feet. Approximately 10,000 cubic yards of soils would be exported from the project site to accommodate the proposed building and retaining walls would be constructed throughout the site to support the soil excavations. A total of 12,196 square feet of asphalt are anticipated to be removed from the project site during construction. The construction period is anticipated to begin in March 2020 and would occur over an approximately 33-month period. Occupancy of the units could occur as early as January 2023.

3.2.6 Discretionary Actions

As shown in Figure 3-12, the project applicant is requesting a change is the zoning of the project site from RM, S-T4, and CN to PD. In addition, the project applicant requests, and the proposed project would require, the following discretionary actions/approvals:

- CEQA Streamlining Approval
- Approval of Purchase and Sale Agreement for Purchase of Parcel 2
- Zone Change to Planned Development
- Vesting Tentative Map
- Site Plan Review

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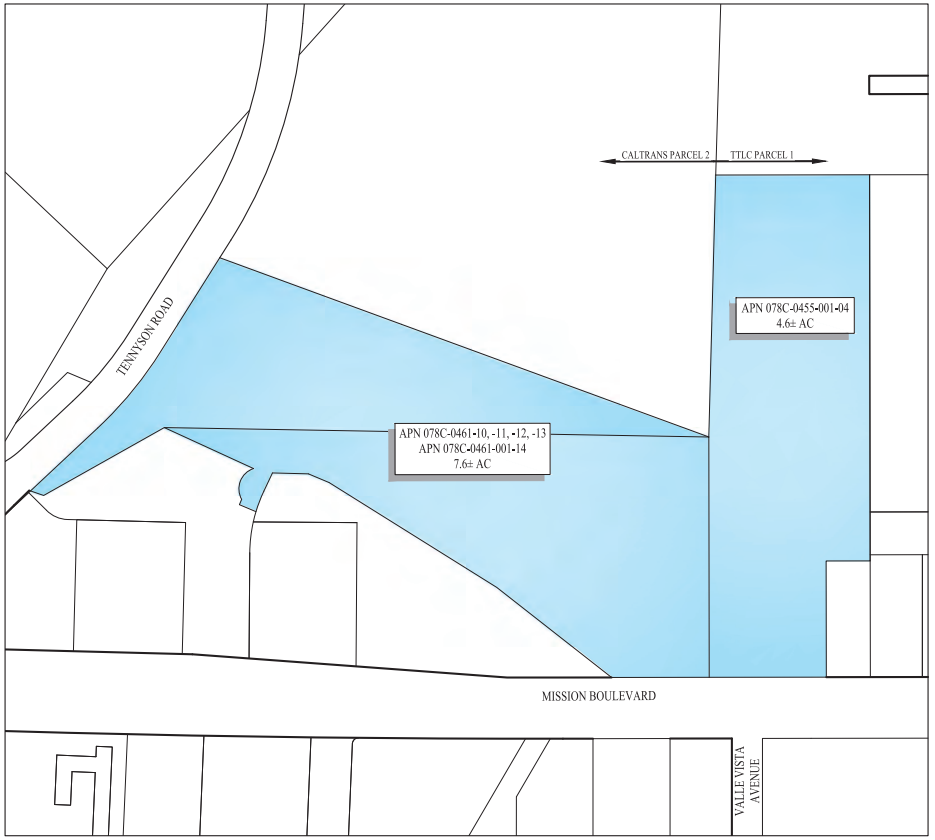
EXISTING ZONING MAP



PROPOSED ZONING MAP

LEGEND			
	ZONING DESIGNATION	EXISTING AREA (AC)	PROPOSED AREA (AC)
	RM: MEDIUM DENSITY RESIDENTIAL – MIN. LOT AREA – 2,500 SF	3.3 AC	0 AC
	S-T4: T4 URBAN GENERAL ZONE – 17.5 TO 35 UNITS/NET ACRE	4.3 AC	0 AC
	CN: NEIGHBORHOOD COMMERCIAL	4.6 AC	0 AC
	PD: PLANNED DEVELOPMENT	0 AC	12.2 AC

LSA

FIGURE 3-12

N

The True Life Companies - Caltrans Development Project
Existing and Proposed Zoning

SOURCES: TRUE LIFE COMPANIES; CBG CIVIL ENGINEERS, APRIL 2019.

P:\HAY1701.06 29212 Mission Blvd\PRODUCTS\Graphics\Figure 3-12.ai (9/3/19)

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4.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist in Chapter 6.0.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

4.1 DETERMINATION

On the basis of this initial evaluation:

☒ I find that the proposed infill project WOULD NOT have any significant effects on the environment that either have not already been analyzed in a prior EIR or that are more significant than previously analyzed, or that uniformly applicable development policies would not substantially mitigate. Pursuant to Public Resources Code Section 21094.5, CEQA does not apply to such effects. A Notice of Determination (Section 15094) will be filed.

☐ find that the proposed infill project will have effects that either have not been analyzed in a prior EIR, or are more significant than described in the prior EIR, and that no uniformly applicable development policies would substantially mitigate such effects. With respect to those effects that are subject to CEQA, I find that such effects WOULD NOT be significant and a NEGATIVE DECLARATION, or if the project is a Transit Priority Project a SUSTAINABLE COMMUNITIES ENVIRONMENTAL ASSESSMENT, will be prepared

☐ I find that the proposed infill project will have effects that either have not been analyzed in a prior EIR, or are more significant than described in the prior EIR, and that no uniformly applicable development policies would substantially mitigate such effects. I find that although those effects could be significant, there will not be a significant effect in this case because revisions in the infill project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION, or if the project is a Transit Priority Project a SUSTAINABLE COMMUNITIES ENVIRONMENTAL ASSESSMENT, will be prepared.

☐ I find that the proposed infill project would have effects that either have not been analyzed in a prior EIR, or are more significant than described in the prior EIR, and that no uniformly applicable development policies would substantially mitigate such effects. I find that those effects WOULD be significant, and an infill ENVIRONMENTAL IMPACT REPORT is required to analyze those effects that are subject to CEQA.

Signature

9/26/19
Date

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5.0 STREAMLINING PER CEQA GUIDELINES SECTION 15183.3

CEQA Guidelines Section 15183.3 allows lead agencies to streamline the environmental review process for eligible infill projects by limiting the topics subject to environmental review at the project level as follows:

1. If an effect was addressed as a significant effect in a prior EIR for a planning level decision (such as the General Plan or SH BART/Mission Blvd FBC Project), then, with some exceptions, that effect need not be analyzed again for an individual infill project even when that effect was not reduced to a less than significant level in the prior EIR.

2. An effect need not be analyzed, even if it was not analyzed in a prior EIR or is more significant than previously analyzed, if the lead agency makes a finding that uniformly applicable development policies or standards, adopted by the lead agency or a city or county, apply to the infill project and would substantially mitigate that effect.

The 2040 General Plan Draft Environmental Impact Report (General Plan EIR)[5] and the SH BART/ Mission Blvd FBC Draft Supplemental Program Environmental Impact Report (SH BART/Mission Blvd SEIR)[6] analyzed environmental impacts associated with adoption and implementation of the General Plan and SH BART/Mission Blvd FBC Project at a programmatic level. The General Plan EIR and SH BART/Mission Blvd SEIR are incorporated by reference in their entirety into this Infill Checklist pursuant to Section 15150 if the CEQA Guidelines. The General Plan and SH BART/Mission Blvd FBC Project are "planning level decisions" as defined by CEQA Guidelines Section 15183.3(f)(2), i.e., an "enactment or amendment of a general plan or any general plan element, community plan, specific plan, or zoning code." Accordingly, the General Plan and the SH BART/Mission Blvd FBC Project are the planning level decisions that are the basis for the use of the Infill Exemption under CEQA Guidelines Section 15183.3 with regard to the environmental analysis of the proposed project.

Public Resources Code Section 21094.5 and CEQA Guidelines Section 15183.3 (Streamlining for Infill Projects) allow streamlining for certain qualified infill projects by limiting the topics subject to review at the project level, if the effects of infill development have been addressed in a planning level decision, or by uniformly applicable development policies. As described in Section 2.2, Appendix M Checklist Performance Standards, an infill project is eligible if the project: (1) is located in an urban area on a site that either has been previously developed or that adjoins existing qualified urban uses on at least 75 percent of the site's perimeter; (2) satisfies the performance standards provided in CEQA Guidelines Appendix M; and (3) is consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy.

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5 Hayward, City of, 2014. *Draft Environmental Impact Report for the City of Hayward 2040 General Plan.* February.

6 Hayward, City of, 2011. *South Hayward BART/Mission Blvd Form-Based Code Draft Supplemental Program EIR.* April.

No additional environmental review is required if the infill project would not cause any new specific effects or more significant effects, or if uniformly applicable development policies or standards would substantially mitigate such effects. Consistent with CEQA Guidelines Section 15183.3, which allows streamlining for qualified infill projects, this Infill Checklist is limited to topics applicable to project-level review only. The analysis in the General Plan EIR and SH BART/Mission Blvd SEIR, described below, is applicable to the project. Therefore, the proposed project meets the requirements for an infill exemption.

5.1 PREVIOUS CEQA DOCUMENTS

The City certified the EIR for its 2040 General Plan in 2014. The 2040 General Plan represents the community's view of its future and expresses the community's conservation and development goals for the next 26 years (2014-2040). The 2040 General Plan EIR assumed approximately 7,472 net new units of single family housing and 7,339 net new units of multi-family housing would be developed through General Plan buildout. At a programmatic level, both Parcels 1 and 2 were considered in the City's General Plan EIR. Parcel 1 is identified as a Priority Development Area. As noted above, the General Plan EIR is designated a "Program EIR" under CEQA Guidelines Section 15183 and 15183.3. As such, subsequent activities under the 2040 General Plan are subject to requirements under each of the CEQA Sections, which are described further in Section 6.0 of this document.

The South Hayward (SH) BART/Mission Blvd FBC Project replaced the majority of the existing Zoning Regulations applicable to an approximately 240-acre area along Mission Boulevard and centered on the South Hayward BART Station. The SH BART/Mission Blvd SEIR tiered from two prior planning program EIRs, including the SH BART/Mission Boulevard Concept Design Plan Program EIR and the 238 Land Use Study Program EIR. Parcel 1 is located within the boundaries of the SH BART/Mission Boulevard Concept Design Plan Program EIR and Parcel 2 is located within the 238 Land Use Study Program EIR; however, Parcel 2 is not included within the SH BART/Mission Blvd FBC Project boundaries. As noted above, the SH BART/Mission Blvd SEIR is designated a "Program EIR" under CEQA Guidelines Section 15183 and 15183.3. As such, subsequent activities under the SH BART/ Mission Blvd FBC Project are subject to requirements under each of the CEQA Sections, which are described further in Section 6.0 of this document. The proposed project is within the development assumptions for Parcels 1 and 2 envisioned by the General Plan and for Parcel 1 envisioned by the SH BART/Mission Blvd FBC Project. The proposed mixed-use project would include 189 residential units and approximately 10,821 square feet of commercial space. The Infill Environmental Checklist below cites the specific portions of the General Plan EIR and/or SH BART/Mission Blvd SEIR that contain the programmatic analysis of the project's potential significant effects.

5.2 PREVIOUS MITIGATION MEASURES AND CURRENT STANDARD CONDITIONS OF APPROVAL

The Infill Checklist provided in Section 6.0 of this document evaluates the potential project-specific environmental effects of the proposed project, and evaluates whether such impacts were adequately covered by the Previous CEQA Documents to allow the above-listed provisions of CEQA to apply. The analysis conducted incorporates by reference the information contained in each of the Previous CEQA Documents. The proposed project is legally required to incorporate and/or comply with the applicable requirements of the mitigation measures identified in the Previous CEQA

Documents. Therefore, the mitigation measures herein are assumed to be included as part of the proposed project, including those that have been modified to reflect the City's current standard language and requirements.

The City incorporates Standard Conditions of Approval (SCAs) into new and revised projects as conditions of approval regardless of a project's environmental determination. The City determines SCAs by incorporating policies and standards from various adopted plans, policies, and ordinances (such as the General Plan and Municipal Code, California Building Code, and Uniform Fire Code, among others), which have been found to substantially mitigate environmental effects. The SCAs are adopted as requirements of an individual project when it is approved by the City and are designed to, and will, substantially mitigate environmental effects. Mitigation measures and SCAs identified in the Previous CEQA Documents as modified that would apply to the proposed project are identified in Section 6.0 in this document, under each appropriate topical discussion.

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6.0 APPENDIX N INFILL ENVIRONMENTAL CHECKLIST

This Infill Environmental Checklist is based on the CEQA Guidelines[7] Appendix N Infill Environmental Checklist form, which was updated and adopted by the State of California Natural Resources Agency in December 2018. That form and this Infill Environmental Checklist are intended to document a qualifying infill project's eligibility for streamlining pursuant to CEQA Guidelines Section 15183.3 and to assist in making the determinations required by Section 15183.3, including whether the infill project's effects have been addressed in a planning level decision or by uniformly applicable development policies.

It should be noted that the General Plan EIR utilized modified significance thresholds found in Appendix G of the CEQA Guidelines in 2013, while the SH BART/Mission Blvd SEIR utilized the Appendix G thresholds in effect in 2011. Since preparation of the Previous CEQA Documents, the CEQA Guidelines and Appendix G (and by extension, Appendix N) have been updated to include new topics (e.g., energy, tribal cultural resources, and wildfire) and many of the significance thresholds and checklist questions have been refined. The following Infill Environmental Checklist utilizes the currently applicable Appendix N checklist form. This and other regulatory updates that have taken effect since preparation of the Previous CEQA Documents are discussed under each issue topic, as appropriate.

[7] CEQA Guidelines, 2019. Public Resources Code 2100-21189; California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387.

6.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Except as provided in Public Resources Code Section 21099, would the project:						
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒	☐	☐
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒	☐	☐
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒	☐	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒	☐	☐

6.1.1 Previous CEQA Documents Findings

The General Plan EIR found that with implementation of the General Plan's Land Use and Community Character, Natural Resource, and Public Facilities and Services policies, impacts of new development related to aesthetics and visual character would be less-than-significant and no mitigation measures would be required. General Plan Policy LU-1.7 specifically requires the City to maintain and implement residential and commercial design guidelines to ensure that future development complies with applicable General Plan goals and policies related to the preservation of scenic views and visual character and the minimization or avoidance of new sources of light and glare. Policy LU-2.9 also identifies implementation of the SH BART Form-Based Code to guide and regulate future development and infrastructure improvements within the SH BART Urban Neighborhood (which applies to development of Parcel 1).

The SH BART/Mission Blvd SEIR identified potentially significant impacts related to visual character and light and glare that were reduced to a less-than-significant level with implementation of

mitigation measures. Specifically, Mitigation Measure Aes-1 requires site plan review and Mitigation Measures Aes-3 requires submittal of lighting plans for all future development projects. These measures are applicable to development of Parcel 1 and are standard City requirements for all new development projects.

6.1.2 Project Analysis

Public Resources Code Section 21099(d), effective January 1, 2014, provides that among other items, "aesthetics… impacts of a residential, mixed-use residential, or employment center project on an infill site located in a transit priority area shall not be considered significant impacts on the environment." Accordingly, aesthetics is no longer to be considered in determining if a project has the potential to result in significant environmental effects for projects that meet all of the following criteria:

1. The project is residential, mixed-use residential, or an employment center;

2. The project is on an infill site;[8] and

3. The project is in a transit priority area.[9]

The proposed project is a mixed-use residential development located on an infill site. The project site is within a transit priority area because it is located within 0.5 miles of the South Hayward BART Station. The proposed project meets each of the above three criteria and thus, this analysis does not consider aesthetics in determining the significance of project impacts under CEQA.

6.1.3 Conclusion

Because the project is exempt from the analysis of impacts related to aesthetics, no impacts are identified for this topic. Implementation of the proposed project would not substantially increase the severity of significant impacts identified in the Previous CEQA Documents, nor would it result in new significant impacts related to aesthetics that were not identified in the Previous CEQA Documents. No mitigation measures are required.

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8 Public Resources Code Section 21099(a) defines an "infill site" as a lot located within an urban area that has been previously developed, or a vacant lot where at least 75 percent of the perimeter of the site adjoins, or is separated only by an improved public right-of-way from, parcels that are developed with qualified urban uses.

9 Public Resources Code Section 21099(a) defines a "transit priority area" as an area within one-half mile of an existing or planned major transit stop. A "major transit stop" is defined in Section 21064.3 of the California Public Resources Code as a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency or service interval of 15 minutes or less during the morning and afternoon peak commute periods.

6.2 AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☐	☒	☐
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☐	☒	☐
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☐	☒	☐
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☐	☒	☐
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☐	☒	☐

6.2.1 Previous CEQA Documents Findings

The General Plan EIR evaluated impacts related to agricultural and forestry resources and identified less-than-significant impacts on these resources with implementation of the General Plan's Land Use and Community Character and Natural Resources policies. Specifically, General Plan Policy LU-1.3 states that local population and employment growth shall be directed toward infill development sites.

The Initial Study included as Appendix B to the SH BART/Mission Blvd SEIR evaluated impacts related to agricultural resources (forestry resources were not an impact topic identified in CEQA Guidelines Appendix G at the time that this EIR was prepared). Impacts were determined to be less than significant because the project area is already developed for urban uses.

6.2.2 Project Analysis

The project site is currently vacant and was previously developed with a gasoline station, among other commercial uses, that was demolished in 1984. The project site is not classified by the State of California Department of Conservation as farmland and no agricultural uses or farmland are present within or adjacent to the project site.[10] As noted in Section 4.0, Project Description, the project site is within the S-T4, CN, and RM zoning districts, and is not zoned for any agricultural, forest land, or timberland use. Therefore, the proposed project would have no impact related to agricultural and forestry resources.

6.2.3 Conclusion

Impacts of the project related to agricultural and forestry resources were analyzed in the Previous CEQA Documents. Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, implementation of the proposed project would not substantially increase the severity of significant impacts identified in the Previous CEQA Documents, nor would it result in new significant impacts related to agricultural and forestry resources that were not identified in the Previous CEQA Documents. No mitigation measures are required.

[10] California, State of, 2016. Department of Conservation. California Important Farmland Finder. Website: maps.conservation.ca.gov/dlrp/ciff (accessed July 10, 2019).

6.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☐	☐	☐	☒
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☐	☐	☒
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☐	☒	☐

The project site is within the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is the regional government agency that monitors and regulates air pollution within the SFBAAB. The Federal Clean Air Act and the California Clean Air Act mandate the control and reduction of specific air pollutants. Under these Acts, the U.S. Environmental Protection Agency and the California Air Resources Board have established ambient air quality standards for specific "criteria" pollutants, designed to protect public health and welfare. Within the BAAQMD, ambient air quality standards for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10}, $PM_{2.5}$), and lead (Pb) have been set by both the State of California and the federal government. The State has also set standards for sulfate and visibility. The BAAQMD is under State non-attainment status for ozone and particulate matter standards. The BAAQMD is classified as non-attainment for the federal ozone 8-hour standard and non-attainment for the federal $PM_{2.5}$ 24-hour standard.

6.3.1 Previous CEQA Documents Findings

The findings of the General Plan EIR and SH BART/Mission Blvd SEIR related to air quality impacts are summarized below.

6.3.1.1 Consistency with Applicable Air Quality Plans

The General Plan EIR referenced the BAAQMD's Bay Area 2010 Clean Air Plan to determine if implementation of the General Plan would conflict with or obstruct implementation of an applicable air quality plan. The General Plan EIR found that implementation of the General Plan would be consistent with all applicable control measures in the Bay Area 2010 Clean Air Plan; however, development occurring under the General Plan would still have significant and unavoidable impacts associated with short-term construction and long-term operational emissions. As such, potential conflicts with the applicable air quality plan were considered to be significant and unavoidable.

The SH BART/Mission Blvd SEIR also referenced the BAAQMD's Bay Area 2010 Clean Air Plan and found that anticipated development would increase development intensity beyond that assumed in the Clean Air Plan, but would support the goals of the Clean Air Plan, including applicable control measures. This was determined to be a less-than-significant impact.

6.3.1.2 Criteria Pollutants

The General Plan EIR did not quantify construction emissions; however, the General Plan EIR found that emissions from individual construction projects could exceed the BAAQMD's project-level significance thresholds, and therefore would result in a significant impact. The General Plan EIR determined that there are no additional measures available that would reduce impacts from short-term construction emissions and impacts would remain significant and unavoidable.

The General Plan EIR determined that project-related operational emissions of reactive organic gases (ROG) and NO_X would be reduced on an annual basis over the General Plan implementation period, as compared with existing conditions. However, the General Plan EIR also determined that operational PM_{10} and $PM_{2.5}$ emissions would increase compared to baseline conditions. According to the General Plan EIR, while the General Plan would be consistent with all applicable control measures in the 2010 Bay Area Clean Air Plan, the rate of increase in vehicle miles traveled (VMT) and vehicle trips under the General Plan would be higher than the rate of population increase by 2035. Therefore, the General Plan EIR found that impacts associated with long-term operational emissions under the General Plan would be a significant impact. The General Plan EIR determined that there are no additional measures that would substantially reduce impacts from long-term operational emissions and impacts would be significant and unavoidable.

6.3.1.3 Substantial Pollutant Concentrations

As discussed in the General Plan EIR, implementation of development projects consistent with the General Plan could involve siting of sensitive receptors near major roadways or near major stationary sources of toxic air contaminants (TACs) and $PM_{2.5}$ emissions, as well as the siting of potential new sources of these emissions, which would be a significant impact. The General Plan EIR also included a Community Risk Reduction Strategy (CRRS) to address health risk exposure from existing and future sources of TAC and $PM_{2.5}$ within the Hayward Planning Area. The CCRS included four maps identifying levels of cancer risk and $PM_{2.5}$ concentrations throughout the City, which is shown in Exhibits 1 through 4 in the Hayward CRRS Technical Support Documentation in the General Plan EIR Air Quality appendix. Even with implementation of the CRRS, impacts related to community exposure to TACs and $PM_{2.5}$ would be significant and unavoidable.

The SH BART/Mission Blvd SEIR found that development anticipated under the SH BART/Mission Blvd FBC Project would bring additional sensitive uses to sites exposed to increased health risks from vehicle emissions from Mission Boulevard (SR 238), which at the time the SEIR was prepared, accommodated average annual daily traffic of approximately 68,000 vehicles. Such exposure would represent a potentially significant impact. The SH BART/Mission Blvd SEIR identified Mitigation Measure Air-2 for projects within 500 feet from Mission Boulevard to reduce impacts to a less-than-significant level.

6.3.1.4 Odors

As discussed in the General Plan EIR, since the General Plan would contain specific policies that avoid or minimize odor-related air quality impacts associated with new development, odor-related impacts would be less than significant. Specifically, Policies NR-2.16, HQL-7.5 and LU-6.5 provide policy direction to avoid locating sensitive land uses near odor-generating sources.

The SH BART/Mission Blvd SEIR determined that odor impacts would be less than significant.

6.3.2 Project Analysis

Based on the BAAQMD attainment status and ambient air quality monitoring data, ambient air quality in the vicinity of the project site has basically remained unchanged since approval of the Previous CEQA Documents. However, the BAAQMD has made two key regulatory changes since the Previous CEQA Documents were certified. The updated Clean Air Plan was adopted in April 2017 and revised BAAQMD CEQA Guidelines were adopted in May 2017.

6.3.2.1 Consistency with Applicable Air Quality Plans *(Criterion a)*

The current BAAQMD clean air plan is the 2017 Clean Air Plan, which was adopted on April 19, 2017.[11] The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the plan describes how the BAAQMD will continue progress toward attaining all State and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. To protect the climate, the plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas reduction targets for 2030 and 2050, and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve greenhouse gas (GHG) reduction targets.

The 2017 Clean Air Plan includes a wide range of control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, such as particulate matter, ozone, and toxic air contaminants. It also includes control measures to reduce emissions of methane and other "super-GHGs" that are potent climate pollutants in the near-term, and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.

Consistency with the Clean Air Plan can be determined if a project does the following: (1) supports the goals of the Clean Air Plan; (2) includes applicable control measures from the Clean Air Plan; and (3) would not disrupt or hinder implementation of any control measures from the Clean Air Plan.

[11] Bay Area Air Quality Management District, 2017. *Bay Area 2017 Clean Air Plan*. April 19.

Because the 2017 Clean Air Plan is the most current clean air plan applicable to the region, the proposed project is evaluated for compliance with this plan below.

The proposed project is consistent with the intent of the Sustainable Mixed Use (SMU) General Plan land use designation and would provide 189 residential units, consisting of 2 mixed-use buildings and 23 townhome buildings, and approximately 10,821 square feet of commercial space as well as a number of community benefits, including a dog park, urban park, plazas, and pocket parks and the extension of over 1,400 lineal feet of a multi-use trail. No changes in General Plan land use designations would be required for the proposed project. Implementation of the proposed project would not substantially increase population, vehicle trips, or VMT due to the project's proximity to high frequency transit along Mission Boulevard and at the nearby South Hayward BART Station. As such, the proposed project would not hinder the goals of the Clean Air Plan.

In addition, the proposed project would comply with all applicable control measures from the BAAQMD Clean Air Plan, as discussed below. The stationary source, agriculture, and natural and working lands control measures are not applicable and therefore are not further addressed below.

Transportation Control Measures. The BAAQMD identifies control measures as part of the Clean Air Plan to reduce ozone precursor emissions from stationary, area, mobile, and transportation sources. The Transportation Control Measures are applicable on a regional level and are designed to reduce emissions from motor vehicles by reducing vehicle trips and VMT in addition to vehicle idling and traffic congestion. The Transportation Control Measures include strategies related to: the promotion of improvements to transit and rail systems, freeways, and arterial roadways (TCM A-1, A-2, and B-1); support for employer trip-reduction programs (TCM C-1); facilitation of safe routes to schools through funding and other mechanisms (TCM C-2); promotion of rideshare services (TCM C-3); education and public outreach (TCM C-4); expansion of bicycle access facilities (TCM D-1); improvements to pedestrian access and facilities (TCM D-2); promotion of land use patterns that support mixed-use, transit-oriented development (TCM D-3); and reduced parking requirements (TCM E-2).

The proposed project would be consistent with the intent of the SMU General Plan land use designation and would provide a mixed-use, walkable, sustainable neighborhood with residential and commercial uses, as well as a number of community benefits, including a dog park, urban park, plazas, and pocket parks, and the extension of over 1,400 lineal feet of a multi-use trail. In addition, a total of 72 bicycle parking spaces would be provided throughout the site, with 38 designated for short-term use and 34 designated for long-term use. The South Hayward BART Station is located approximately 0.3 miles west of the project site and there is high frequency bus service along Mission Boulevard. Therefore, the proposed project would support the ability to use alternative modes of transportation, would promote initiatives to reduce vehicle trips and VMT, and would increase the use of alternate means of transportation. Therefore, the proposed project would not conflict with the identified Transportation Control Measures of the Clean Air Plan.

Energy Control Measures. The Clean Air Plan also includes Energy and Climate Control Measures, designed to reduce ambient concentrations of criteria pollutants and to reduce emissions of CO_2. Implementation of these measures is intended to promote energy conservation and efficiency in buildings throughout the community (ECM 1), promote renewable forms of energy production (ECM

2), reduce the "urban heat island" effect by increasing reflectivity of roofs and parking lots (ECM 3), and promote the planting of (low-volatile organic compound [VOC]-emitting) trees to reduce biogenic emissions, lower air temperatures, provide shade, and absorb air pollutants (ECM 4). The measures include voluntary approaches to reduce the heat island effect by increasing shading in urban and suburban areas through the planting of trees.

Implementation of the proposed project would include paved areas that could result in a heating effect; however, the proposed project would also include a total of 52,865 square feet of open space and a 12-foot-wide, approximately 1,400-foot-long easement running through the site for the extension of a multi-use trail. In addition, the proposed project would be required to comply with the latest CALGreen standard building measures and Title 24 standards. Therefore, the proposed project would not conflict with the Energy and Climate Control Measures.

Building Control Measures. The BAAQMD has authority to regulate emissions from certain sources in buildings such as boilers and water heaters but has limited authority to regulate buildings themselves. Therefore, the strategies in the control measures for this sector focus on implementing green building measures (BL 1), market-based solutions (BL 3), and urban heat island mitigation (BL 4). These measures focus efforts towards working with local governments that do have authority over local building codes, to facilitate adoption of best GHG control practices and policies. As identified above, the proposed project would be required to comply with the latest CALGreen standard building measures and Title 24 standards. Therefore, the proposed project would not conflict with these measures.

Waste Management Control Measures. The Waste Management Measures include strategies to reduce emissions from landfills (WA 1), composting and anaerobic digesters (WA 2), green waste diversion (WA 3), and recycling and waste reduction (WA 4). These measures focus on reducing or capturing methane emissions from landfills and composting facilities, diverting organic materials away from landfills, and increasing waste diversion rates through efforts to reduce, reuse, and recycle. The proposed project would comply with local requirements for waste management (e.g., recycling and composting services). Therefore, the proposed project would be consistent with the Waste Management Control Measures of the Clean Air Plan.

Water Control Measures. The Water Control Measures focus on reducing emissions of criteria pollutants, TACs, and GHGs by encouraging water conservation (WR 2), limiting GHG emissions from publicly owned treatment works (POTWs), and promoting the use of biogas recovery systems (WR 1). Since these measures apply to POTWs and local government agencies, the Water Control Measures are not applicable to the proposed project.

Super GHG Control Measures. The Super-GHG Control Measures are designed to facilitate the adoption of best GHG control practices and policies through the BAAQMD and local government agencies. These measures include reducing emissions of short-lived climate pollutants (SL 1), provide guidance for local planners (SL 2), and work to develop a GHG monitoring and emission measurement network (SL 3). As identified above, the proposed project would be required to comply with the latest CALGreen standard building measures and Title 24 standards reducing GHG emissions. In addition, as discussed in Section 8 of this Environmental Checklist, Greenhouse Gas

Emissions, the proposed project would be consistent with the City's Climate Action Plan. Therefore, the proposed project would not conflict with the Super-GHG Control Measures.

As discussed above, the proposed project would generally implement the applicable measures outlined in the currently applicable Clean Air Plan, including Transportation Control Measures. Therefore, the proposed project would not create impacts related to clean air plan consistency that would be more significant than impacts identified in the Previous CEQA Documents.

6.3.2.2 Criteria Pollutants *(Criterion b)*

The BAAQMD is currently designated as a nonattainment area for State and national ozone standards and national particulate matter ambient air quality standards. The BAAQMD's nonattainment status is attributed to the region's development history. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant.

In developing thresholds of significance for air pollutants, the BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, project-level analysis of air quality impacts is cumulative in nature and additional analysis to assess cumulative impacts is unnecessary. The following analysis assesses the potential project-level air quality impacts associated with construction and operation of the proposed project.

Short-Term Construction Emissions. During construction of the proposed project, short-term degradation of air quality may occur due to the release of particulate matter emissions (i.e., fugitive dust) generated by grading, hauling, and other activities. Emissions from construction equipment are also anticipated and would include CO, NO_x, ROG, directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and toxic air contaminants (TACs) such as diesel exhaust particulate matter.

Site preparation and project construction would involve grading, paving, and other activities. Construction-related effects on air quality from the proposed project would be greatest during the site preparation phase due to the disturbance of soils. If not properly controlled, these activities would temporarily generate particulate emissions. Sources of fugitive dust would include disturbed soils at the construction site. Unless properly controlled, vehicles leaving the site would deposit dirt and mud on local streets, which could be an additional source of airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions, as well as soil moisture, silt content of soil, wind speed, and the amount of operating equipment. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Water or other soil stabilizers can be used to control dust, resulting in emission reductions of 50 percent or more. The BAAQMD has established standard measures for reducing fugitive dust

emissions (PM_{10}). With the implementation of these Basic Construction Mitigation Measures, fugitive dust emissions from construction activities would not result in adverse air quality impacts.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_x, ROGs and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

Construction emissions were estimated for the proposed project using the California Emissions Estimator Model version 2016.3.2 (CalEEMod), consistent with BAAQMD recommendations. As discussed in Section 4.0, Project Description, approximately 10,000 cubic yards of soils would be exported from the project site and a total of 12,196 square feet of asphalt are anticipated to be removed, which were included as inputs to CalEEMod. The construction period is anticipated to begin in March 2020 and would occur over an approximately 33-month period. Occupancy of the units could occur as early as January 2023. Other construction details are not yet known; therefore, default assumptions (e.g., fleet activities) from CalEEMod were used. Construction-related emissions are presented in Table 6.A. CalEEMod output sheets are included in Appendix A.

Table 6.A: Project Construction Emissions in Pounds Per Day

Project Construction	ROG	NO_x	Exhaust PM_{10}	Fugitive Dust PM_{10}	Exhaust $PM_{2.5}$	Fugitive Dust $PM_{2.5}$
Average Daily Emissions	5.0	19.9	0.8	2.0	0.8	0.7
BAAQMD Thresholds	54.0	54.0	54.0	BMP	82.0	BMP
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: LSA (July 2019).
BMP = Best Management Practices

As shown in Table 6.A, construction emissions associated with the project would be less than significant for ROG, NO_x, $PM_{2.5}$, and PM_{10} exhaust emissions. The BAAQMD requires the implementation of the BAAQMD's Basic Construction Mitigation Measures (Best Management Practices) for all development projects to minimize construction fugitive dust impacts. Therefore, consistent with BAAQMD requirements and General Plan Policies NR-2.2 and NR-2.7, the following Standard Condition of Approval (SCA) would be incorporated into the proposed project.

> **SCA AIR-1:** Consistent with General Plan Policies NR-2.2 and NR-2.7, in order to meet the BAAQMD fugitive dust threshold, the following BAAQMD Basic Construction Mitigation Measures shall be implemented:
>
> - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
>
> - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

- All visible mud or dirt tracked-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

- All vehicle speeds on unpaved roads shall be limited to 15 mph.

- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible.

- Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

- A publicly visible sign shall be posted with the telephone number and person to contact at the City of Hayward regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD phone number shall also be visible to ensure compliance with applicable regulations.

With implementation of SCA AIR-1, construction of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS. Therefore, with implementation of SCA AIR-1, the proposed project would not result in new or more significant construction-related air quality impacts than identified in the Previous CEQA Documents, and these impacts would be less than significant.

Long-Term Operational Emissions. The proposed project would develop the site with new residential, commercial, and open space uses. These new land uses would result in mobile air quality emissions from increased vehicle trips to the project site and area source air quality impacts such as emissions generated from the use of landscaping equipment and water heating. The General Plan EIR determined that the rate of increase in VMT and vehicle trips under the General Plan would be higher than the rate of population increase by 2035 and found impacts associated with long-term operational emissions under the General Plan to be a significant impact.

Emission estimates for operation of the proposed project were calculated using CalEEMod. Trip generation rates for the project were based on the project's trip generation estimates, as identified in the Transportation Impact Analysis[12], which estimates that the proposed project would generate approximately 1,592 average daily trips, with 163 trips occurring during the AM peak hour and 182

12 LSA, 2019. *Transportation Impact Analysis, 29212 Mission Boulevard, Hayward, California*. September.

trips occurring during the PM peak hour. The daily and annual emissions associated with project operational trip generation, energy, and area sources are identified in Table 6.B below for ROG, NO_x, CO, PM_{10}, and $PM_{2.5}$. CalEEMod output sheets are included in Appendix A.

Table 6.B: Project Operational Emissions

	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Emissions in Pounds Per Day					
Area Source Emissions	5.7	1.4	16.1	0.2	0.2
Energy Source Emissions	0.1	1.1	0.5	0.1	0.1
Mobile Source Emissions	2.1	7.7	19.1	5.7	1.6
Total Emissions	**8.0**	**10.2**	**35.7**	**6.0**	**1.8**
BAAQMD Threshold	54.0	54.0	N/A	82.0	54.0
Exceed?	**No**	**No**	**N/A**	**No**	**No**
Emissions in Tons Per Year					
Area Source Emissions	1.0	<0.1	1.4	<0.1	<0.1
Energy Source Emissions	<0.1	0.2	0.1	<0.1	<0.1
Mobile Source Emissions	0.3	1.4	3.3	1.0	0.3
Total Emissions	**1.3**	**1.6**	**4.8**	**1.0**	**0.3**
BAAQMD Threshold	10.0	10.0	N/A	15.0	10.0
Exceed?	**No**	**No**	**N/A**	**No**	**No**

Source: LSA (July 2019).

The results shown in Table 6.B indicate that the proposed project would not exceed the significance criteria for daily or annual ROG, NO_x, PM_{10} or $PM_{2.5}$ emissions; therefore, operation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State AAQS. Therefore, the proposed project would not result in new or more significant operation-related air quality impacts than identified in the Previous CEQA Documents, and these impacts would be less than significant.

Localized CO Impacts. The BAAQMD 2017 CEQA Guidelines establishes a screening methodology that provides a conservative indication of whether the implementation of a proposed project would result in significant CO emissions. According to the BAAQMD CEQA Guidelines, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, and the regional transportation plan and local congestion management agency plans.

- Project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, or below-grade roadway).

The proposed project would not conflict with standards established by the Alameda County Transportation Commission (ACTC) for designated roads and highways, a regional transportation plan, or other agency plans. Additionally, the proposed project is expected to generate approximately 163 AM peak hour trips and approximately 182 PM peak hour trips. Therefore, the proposed project would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour. The project site is within an open area and is not located in an area where mixing of air is limited. Therefore, because the project does not exceed the screening criteria, the project would not result in localized CO concentrations that would exceed State or federal standards and potential impacts would be less than significant.

6.3.2.3 Substantial Pollutant Concentrations *(Criterion c)*

Sensitive receptors are defined as residential uses, schools, daycare centers, nursing homes, and medical centers. Individuals particularly vulnerable to diesel particulate matter are children, whose lung tissue is still developing, and the elderly, who may have serious health problems that can be aggravated by exposure to diesel particulate matter. Exposure from diesel exhaust associated with construction activity contributes to both cancer and chronic non-cancer health risks.

According to the BAAQMD, a project would result in a significant impact if it would: individually expose sensitive receptors to TACs resulting in an increased cancer risk greater than 10.0 in one million, increased non-cancer risk of greater than 1.0 on the hazard index (chronic or acute), or an annual average ambient $PM_{2.5}$ increase greater than 0.3 micrograms per cubic meter ($\mu g/m^3$). A significant cumulative impact would occur if the project, in combination with other projects located within a 1,000-foot radius of the project site, would expose sensitive receptors to TACs resulting in an increased cancer risk greater than 100.0 in one million, an increased non-cancer risk of greater than 10.0 on the hazard index (chronic), or an ambient $PM_{2.5}$ increase greater than 0.8 $\mu g/m^3$ on an annual average basis. Impacts from substantial pollutant concentrations are discussed below.

Long-Term Exposure of Sensitive Receptors to Toxic Air Contaminants. As discussed in the General Plan EIR, implementation of development projects consistent with the General Plan could involve siting of sensitive receptors near major roadways or near major stationary sources of TAC and $PM_{2.5}$ emissions, as well as the siting of potential new sources of these emissions. Such actions could increase community health risk exposure associated with these emissions. The General Plan EIR found that impacts associated with health risk exposure to TACs and $PM_{2.5}$ would be a significant impact.

The General Plan EIR included a Community Risk Reduction Strategy (CRRS) to address health risk exposure from existing and future sources of TAC and $PM_{2.5}$ within the Hayward Planning Area. As part of the development of the CRRS, an inventory of emissions sources was collected and dispersion modeling conducted to determine which areas of the Hayward Planning Area are exposed to higher concentrations of cancer risk associated with the inhalation of TACs and/or higher concentrations of $PM_{2.5}$. The modeling produced four maps for understanding how levels of cancer risk and $PM_{2.5}$ concentrations vary throughout the City, which is shown in Exhibits 1 through 4 in the Hayward Community Risk Reduction Plan Technical Support Documentation in the General Plan EIR Air Quality appendix. Based on Exhibits 1 through 4 of the Community Risk Reduction Plan Technical Support Documentation, the project site is located within a low health risk exposure area.

In addition, the SH BART/Mission Blvd SEIR found that development anticipated under the SH BART/Mission Blvd FBC Project would bring additional sensitive uses to sites exposed to increased health risks from vehicle emissions from Mission Boulevard (SR 238). Such exposure would represent a potentially significant impact. The SH BART/Mission Blvd SEIR identified Mitigation Measure Air-2 for projects within 500 feet from Mission Boulevard. The project site is located within 500 feet of Mission Boulevard; therefore, the proposed project would be required to implement Mitigation Measure Air-2 as identified in the SH BART/Mission Blvd SEIR. With implementation of modified Mitigation Measure Air-2, as project SCA AIR-2, the proposed project would not result in any new or more significant construction-related air quality impacts beyond those identified in the Previous CEQA Documents, and this impact would be less than significant.

SCA AIR-2: In compliance with the SH BART/Mission Blvd SEIR Mitigation Measure Air-2 and General Plan Policy NR-2.2 and NR-2.15, the project applicant shall implement the following design features to ensure that operational air quality impacts would not occur.

Indoor Air Quality

In accordance with the recommendations of the California Air Resources Board (CARB) and the Bay Area Air Quality Management District, appropriate measures shall be incorporated into the project design in order to reduce the potential health risk due to exposure to diesel particulate matter to achieve an acceptable interior air quality level for sensitive receptors. The appropriate measures shall include one of the following methods:

a. The project applicant shall implement all of the following features that have been found to reduce the air quality risk to sensitive receptors and these measures shall be included in the project construction plans. These features shall be submitted to the City's Planning Division for review and approval prior to the issuance of a demolition, grading, or building permit and shall be maintained on an ongoing basis during operation of the project.

    i. For sensitive uses (residences, day care centers, and playgrounds) sited within the overlay zone from Mission Boulevard, the applicant shall install, operate and maintain in good working order a central heating and ventilation (HV) system or other air take system in the building, or in each individual unit, that meets or exceeds an efficiency standard of MERV 13. The HV system shall include the following features: Installation of a high efficiency filter and/or carbon filter to filter particulates and other chemical matter from entering the building. Either HEPA filters or ASHRAE 85 percent supply filters shall be used.

    The project applicant shall maintain, repair and/or replace HV system on an ongoing and as needed basis or shall prepare an operation and maintenance manual for the HV system and the filter. The manual shall include the operating instructions and the maintenance and replacement schedule. This manual shall be included in the project CC&Rs and/or distributed to the building maintenance staff. In addition, the applicant shall prepare a separate homeowners manual. The manual shall contain the operating instructions and the maintenance and replacement schedule for the HV system and the filters.

b. Alternative to (a) above, the project applicant shall retain a qualified air quality consultant to prepare a health risk assessment (HRA) in accordance with the CARB and the Office of Environmental Health and Hazard Assessment requirements to determine the exposure of project residents/occupants/users to air polluters prior to issuance of a demolition, grading, or building permit. The HRA shall be submitted to the Development Services Department for review and approval. The applicant shall implement the approved HRA recommendations, if any. If the HRA concludes that the air quality risks from nearby sources are at or below acceptable levels, then additional measures are not required.

Exterior Air Quality

c. To the maximum extent practicable, individual and common exterior open space, including playgrounds, patios, and decks, shall either be shielded from the source of air pollution by buildings or otherwise buffered to further reduce air pollution for project occupants.

d. Alternative to (c) above, an HRA could be prepared and implemented to take into account the risk specifics of the site, as more fully described in item (b) above.

Short-Term Exposure of Sensitive Receptors to Toxic Air Contaminants. A construction HRA was prepared for the proposed project, which evaluates construction-period health risk to off-site receptors. The project site is located adjacent to existing residential uses that could be exposed to diesel emission exhaust during the construction period. To estimate the potential cancer risk associated with construction of the proposed project from equipment exhaust (including diesel particulate matter), a dispersion model was used to translate an emission rate from the source location to a concentration at the receptor location of interest (i.e., a nearby residence and worksites). Dispersion modeling varies from a simpler, more conservative screening-level analysis to a more complex and refined detailed analysis. This refined assessment was conducted using the CARB exposure methodology with the air dispersion modeling performed using the USEPA dispersion model AERMOD. The model provides a detailed estimate of exhaust concentrations based on site and source geometry, source emissions strength, distance from the source to the receptor, and meteorological data. Construction equipment is unknown at this time, therefore, the CalEEMod default of Tier 0 was used. Table 6.C identifies the results of the analysis. Model snap shots of the sources are shown in Appendix B.

Table 6.C: Unmitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)
Maximum Exposed Individual Location (Residential)	92.9	0.15	0.05
Threshold	**10.0**	**1.0**	**0.30**

Source: LSA (July 2019).

As shown in Table 6.C, the risk would be 92.9 in one million, which would exceed the BAAQMD cancer risk threshold of 10 in one million. The highest chronic hazard index would be 0.15, which would not exceed the threshold of 1.0. In addition, the maximum $PM_{2.5}$ concentration would be 0.05 µg/m^3, which would not exceed the BAAQMD significance threshold of 0.30 µg/m^3.

As indicated above, the cancer risk of 92.9 in one million would exceed the BAAQMD's threshold. The General Plan EIR identified short-term construction emissions as a significant and unavoidable impact, based on the uncertainty of individual specific projects. However, General Plan Policy NR-2.2 requires individual projects to incorporate all feasible measures that reduce construction and operation emissions. Therefore, implementation of the following SCA would be required to reduce substantial pollutant concentrations during project construction and would reduce this impact of the project to a less-than-significant level.

> **SCA AIR-3:** Consistent with General Plan Policy NR-2.2 and NR-2.12, the project contractor shall ensure all off-road diesel-powered construction equipment of 50 horsepower or more used for the project meet the California Air Resources Board (CARB) Tier 4 emissions standards or equivalent.

Table 6.D identifies the results of the analysis with implementation of SCA AIR-3.

Table 6.D: Mitigated Inhalation Health Risks from Project Construction to Off-Site Receptors

	Carcinogenic Inhalation Health Risk in One Million	Chronic Inhalation Hazard Index	Annual $PM_{2.5}$ Concentration (µg/m^3)
Maximum Exposed Individual Location (Residential)	5.4	0.01	0.00
Threshold	**10.0**	**1.0**	**0.30**

Source: LSA (July 2019).

As shown in Table 6.D, the mitigated risk would be 5.4 in one million, which would not exceed the BAAQMD cancer risk of 10 in one million threshold. Therefore, with implementation of SCA AIR-3, construction of the project would not exceed BAAQMD thresholds and would not expose nearby sensitive receptors to substantial pollutant concentrations. Therefore, with implementation of SCA AIR-3, the proposed project would not result in any new or more significant construction-related health risk impacts.

6.3.2.4 Odors *(Criterion d)*

During construction of the proposed project, some odors may be present due to diesel exhaust. However, these odors would be temporary and limited to the construction period. The proposed project would not include any activities or operations that would generate objectionable odors and once operational, the project would not be a source of odors. Therefore, the proposed project would not result in other emissions (such as those leading to odors) adversely affecting a substantial

number of people and would not result in any new or more significant impacts than identified in the Previous CEQA Documents.

6.3.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, with implementation of SCA AIR-1, SCA AIR-2, and SCA AIR-3, implementation of the proposed project would not result in a new significant impacts related to air quality emissions than identified in the Previous CEQA Documents.

6.4 BIOLOGICAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐	☐	☒
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☐	☒	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☐	☒	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☐	☒	☐

6.4.1 Previous CEQA Documents Findings

The General Plan EIR identified less-than-significant impacts related to biological resources, and no mitigation measures were required. Specifically, the General Plan EIR determined that General Plan Policy LU-7.5 would encourage clustering of residential units and preservation of sensitive habitats, ensuring that less than significant impacts would occur. The SH BART/Mission Blvd SEIR identified potentially significant impacts related to wetlands and conflicts with the Hayward Tree Preservation Ordinance that were reduced to a less-than-significant level with implementation of mitigation measures.

6.4.2 Project Analysis

The following discussion and analysis is based upon:

- A search of California Natural Diversity Database (CNDDB) records for special-status wildlife and plant species with occurrences within 5 miles of the project site conducted on May 7, 2019;
- A search of the California Native Plant Society (CNPS) Online Inventory of rare plants with records on the Unites States Geological Survey (USGS) Hayward Quadrangle Map conducted on May 21, 2019;
- A query of the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool for a list of species and other resources under USFWS jurisdiction that are known or expected to be on or near the project site conducted on May 22, 2019; and,
- A reconnaissance survey of the project area conducted on June 3, 2019.

The approximately 12.2-acre site is bounded by existing commercial uses to the south, Mission Boulevard to the west and Tennyson Road to the north. At the time of the reconnaissance survey bulldozers were grading the land to the east for the Ersted Development.

Most of the site has been developed or cultivated. Portions of the site are paved or have access roads and constructed walls and swales. Vegetation is primarily non-native annual grassland with wild oats (*Avena* spp.) and ripgut brome (*Bromus diandrus*). Other weedy plant species found in the grasslands include Italian thistle (*Carduus pycnocephalus*), fennel (*Foeniculum vulgare*), wild radish (*Raphanus sativus*), and black mustard (*Brassica nigra*). Some of the grasslands had recently been disked and/or mowed, presumably for fire control.

The site also has scattered planted ornamental trees, and several eucalyptus (*Eucalyptus* sp.) trees. Native trees on the site include coast live oak (*Quercus agrifolia*) and California buckeye (*Aesculus californica*). Coyote brush (Baccharis pilularis) is the most common shrub species on the property, followed by poison oak (*Toxicodendron diversilobum*) and Himalayan blackberry (*Rubus armeniacus*).

A few common wildlife species were observed, including western fence lizard (*Sceloporus occidentalis*) and California ground squirrel (*Otospermophilus beecheyi*). The following birds were observed: mourning dove (*Zenaida macroura*), California towhee (*Melozone crissalis*), American crow (*Corvus brachyrhynchos*), dark-eyed junco (*Junco hyemalis*), and the feather of a wild turkey (*Meleagris gallopavo*).

6.4.2.1 Special-Status Species *(Criterion a)*

For the purposes of this report, special-status species are defined as follows:

- Species that are listed, formally proposed, or designated as candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA).
- Species that are listed, or designated as candidates for listing, as rare, threatened, or endangered under the California Endangered Species Act (CESA).
- Plant species on Lists 1B and 2 in the CNPS *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2009).
- Animal species designated as Species of Special Concern by CDFW.
- Animal species designated as Fully Protected by Fish and Game Code.
- Species that meet the definition of rare, threatened, or endangered under Section 15380 of the CEQA guidelines.

Plants. The CNDDB, CNPS, and IPaC searches resulted in a list of 15 special-status plant species that may occur in the vicinity of the project site. The names, regulatory status, habitats, and potential to occur on the project site for each of these 15 species are presented in Table 6.E. There is no potential for any of the species to occur on the site. Many of these species are only found in vernal pools, or marshes, which likely never existed on the mostly sloped site, or were filled when the land was converted to orchards or otherwise developed. Habitat alteration and degradation eliminated any other rare native plants that may have occurred on the site.

Animals. The CNDDB and IPaC searches resulted in a list of 26 animal species that may occur in the vicinity of the project site. The names, regulatory status, habitats, and potential to occur on the project site for each of these 26 species are presented in Table 6.F. Two special-status species were determined to have potential to occur on the site: white-tailed kite (*Elanus leucurus*) and burrowing owl (*Athene cunicularia*).

White-tailed Kite. The white-tailed kite is a raptor that hunts in grasslands and savannahs. It is known to nest in Alameda County. It is Fully Protected under Fish and Game Code (FGC) but is not listed under the ESA or CESA. The regulations that implement the Fully Protected Species Statute provide that fully protected species may not be "taken" or possessed at any time. Furthermore, the CDFW prohibits any State agency from issuing incidental take permits for fully protected species, except for necessary scientific research. Therefore, the proposed project must avoid the take of white-tailed kite.

Burrowing Owl. The burrowing owl lives in burrows, especially in those created by the California ground squirrel. It hunts in grasslands and savannahs and is known to nest in Alameda County. It is considered a Species of Special Concern but is not listed under the ESA or CESA. The CDFW's 2012 Staff Report on Burrowing Owl Mitigation contains a protocol that has been developed to determine the presence or absence of burrowing owls at a site, and mitigation guidelines to avoid impacts if the species is present.

Table 6.E: Special-Status Plant Species Evaluated

Species	Status* (Federal/State/CNPS Rare Plant Rank)	Habitat/Blooming Period	Discussion/Potential to Occur
Amsinckia lunaris Bent-flowered fiddleneck	–/–/1B.2	Coastal bluff scrub, cismontane woodland, Valley and foothill grassland. Elevation: 3-500 meters. Blooms from March to June.	There are no CNDDB occurrences within 5 miles of the site. The conditions of the site are unlike those required for this species. No potential to occur.
Astragalus tener var. *tener* Alkali milk-vetch	–/–/1B.2	Mesic alkaline and adobe clay soils in valley and foothill grassland, adjacent to vernal pools. Elevation: 1-60 meters. Blooms from March to June.	There are two extirpated, and one possibly extirpated, CNDDB occurrences within 5 miles of the site. The site lacks alkali soils that this species prefers. No potential to occur.
Balsamorhiza macrolepis Big-scale balsamroot	–/–/1B.2	Chaparral, cismontane woodland, valley and foothill grassland. Elevation: 45-1,555 meters. Blooms from March to June.	There are no CNDDB occurrences within 5 miles of the site. This species was not observed during the reconnaissance survey. No potential to occur.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	–/–/1B.1	Grazed and ungrazed annual grassland. Alkaline or saline soils sometimes described as heavy white clay (saline clay soil). Elevation: 1-230 meters. Blooms from May to October.	There is one presumed extant CNDDB occurrence within 5 miles of the site, and a second occurrence that is extirpated. The site lacks suitable habitat (alkaline or saline soils). The CNPS online inventory says it may occur on the Hayward Quad. No potential to occur.
Dirca occidentalis Western leatherwood	–/–/1B.2	Generally found on north or northeast facing slopes in the fog belt, in mixed forest and chaparral. Elevation: 50-400 meters. Blooms from November to March.	There are no CNDDB occurrences within 5 miles of the site. The CNPS online inventory says it may occur on the Hayward Quad. Suitable cismontane woodland habitat is not present on the project site. This species was not observed during the reconnaissance survey. No potential to occur.
Eryngium jepsoni Jepson's coyote thistle	–/–/1B.2	Found in clay soils in vernal pools in valley and foothill grassland. Elevation: 3-300 meters. Blooms from April to August.	There are no CNDDB occurrences within 5 miles of the site. The CNPS online inventory says it may occur on the Hayward Quad. The site lacks appropriate vernal pool habitat. No potential to occur.
Fritillaria liliacea Fragrant fritillary	–/–/1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Elevation: 3-410 meters. Blooms from February to April.	There are no CNDDB occurrences within 5 miles of the site. The CNPS online inventory says it may occur on the Hayward Quad. There is no suitable habitat on the site. No potential to occur.

Table 6.E: Special-Status Plant Species Evaluated

Species	Status* (Federal/State/CNPS Rare Plant Rank)	Habitat/Blooming Period	Discussion/Potential to Occur
Helianthella castanea Diablo helianthella	–/–/1B.2	Rocky soils in chaparral/oak woodland interface. Elevation: 60-1,300 meters. Blooms from March to June.	There is one CNDDB occurrence within 5 miles of the site. The occurrence is within Garin/Dry Creek Regional Park. The site lacks appropriate rocky chaparral habitat. No potential to occur.
Holocarpha macradenia Santa Cruz tarplant	FT/CE/1B.1	Occurs in sandy-clay soil in coastal prairie, coastal scrub, and in valley and foothill grassland. Elevation: 10-220 meters. Blooms from June to October.	There are no CNDDB occurrences within 5 miles of the site. The CNPS online inventory says it may occur on the Hayward Quad. There is no suitable habitat on the site. Other sources say that the last remaining natural population in the Bay Area was extirpated by development in 1993. No potential to occur.
Lasthenia conjugens Contra Costa goldfields	FE/–/1B.1	Vernal pools in cismontane woodland, alkaline playas, and valley and foothill grassland. Elevation: 0-470 meters. Blooms from March to June.	There is one CNDDB occurrence within 5 miles of the site. There are no natural vernal pools on the site. No potential to occur.
Plagiobothrys glaber Hairless popcornflower	–/–/1A	Coastal salt marshes, alkaline meadows, and seeps. Elevation: 15-180 meters. Blooms from March to May.	There are two “possibly extirpated” CNDDB occurrences within 5 miles of the site. The species is believed to be extinct in California. There is no suitable habitat on the site. No potential to occur.
Polemonium carneum Oregon polemonium	–/–/2B.2	Coastal prairie, openings in coastal scrub and lower montane coniferous forests. Elevation: 0-1,800 meters. Blooms from April to September.	There is one presumed extant CNDDB occurrence within 5 miles of the site. There is no suitable habitat on the site. No potential to occur.
Spergularia macrotheca var. *longistyla* Long-styled sand-spurrey	–/–/1B.2	Alkaline soils, in wet areas such as seeps in meadows and marshes or swamps. Elevation: 0-255 meters. Blooms from February to May.	There is one presumed extant CNDDB occurrence within 5 miles of the site. There is no suitable habitat on the site. No potential to occur.

Table 6.E: Special-Status Plant Species Evaluated

Species	Status* (Federal/State/CNPS Rare Plant Rank)	Habitat/Blooming Period	Discussion/Potential to Occur
Streptanthus albidus ssp. *peramoenus* Most beautiful jewelflower	–/–/1B.2	Chaparral, valley grassland, foothill woodland, often on serpentine soils. Elevation: 95-1,000 meters. Blooms from April to September.	There are two presumed extant CNDDB occurrences within 5 miles of the site. This species is rare due to the impacts of development, non-native plants, and grazing. It would not be able to compete with the non-native plant species that dominate the site. No potential to occur.
Stuckenia filiformis subsp. *alpina* Slender-leaved pondweed	–/–/2B.2	Marshes and swamps; shallow, clear water of lakes and drainage channels. Elevation: 300-2,150 meters.	There is one presumed extant CNDDB occurrence within 5 miles of the site. The site lacks permanent freshwater marsh, swamp, and drainage channels. No potential to occur.

Source: LSA (2019).
*Status:
FE: Federally listed as endangered
FT: Federally listed as threatened
CE: State listed as threatened
1A: Plants presumed extirpated in California and either rare or extinct elsewhere
1B.1: Plants rare, threatened, or endangered in California and elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
1B.2: Plants rare, threatened, or endangered in California and elsewhere; moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)
2B.1: Plants rare, threatened, or endangered in California, but more common elsewhere; seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
2B.2: Plants rare, threatened, or endangered in California, but more common elsewhere; moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat)

Table 6.F: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat	Discussion
Invertebrates			
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/–/–	Lives in vernal pools, ditches, road ruts, and other natural or man-made temporary water bodies, primarily in the Sacramento Valley.	There are no CNDDB records within 5 miles of the site. There are no vernal pools on the site. No potential to occur.
San Bruno elfin butterfly *Callophyrus mossii bayensis*	FE/–/–	Lives in the coastal mountains of San Mateo County. The larval food plant is stonecrop (*Sedum spathulifolium*).	There are no CNDDB records within 5 miles of the site. The USFWS has determined that all known populations of the species are restricted to San Mateo County. There are no stonecrop plants on the project site. No potential to occur.
Vernal pool fairy shrimp *Branchinecta lynchi*	FT/–/–	Lives in vernal pools.	There are no CNDDB records within 5 miles of the site. There are no vernal pools on the site. No potential to occur.
Amphibians			
California red-legged frog *Rana draytonii*	FT/–/CSC	Lives in ponds, streams, drainages, and associated uplands; requires areas of deep, still, or slow-moving water for breeding.	The CNDDB lists five presumed extant occurrences within 5 miles of the project site. There is no suitable breeding habitat on the site, and the site is isolated from known or potential breeding habitat by extensive development. No potential to occur.
California tiger salamander *Ambystoma californiense*	FT/ST/CSC	Breeds in seasonal pools and stock ponds. Spends most of its life underground in small mammal burrow complexes in upland grasslands adjacent to aquatic breeding habitat.	The CNDDB lists one presumed extant occurrence within 5 miles of the site. The nearest presumed extant occurrence is approximately 4.8 miles from the site. The USFWS considers contiguous uplands with burrows within 1.24 miles of breeding habitat to be potential habitat. The site is isolated from all known or potential breeding habitat by extensive residential development and major roads. No potential to occur.
Foothill yellow-legged frog *Rana boylii*	–/SC/CSC	Breeds in perennial streams with cobble or gravel substrates to attach eggs. Usually stays close to water.	The CNDDB lists one presumed extant occurrence within 5 miles of the site. The site is isolated from all known or potential breeding habitat by extensive residential development and major roads. No potential to occur.

Table 6.F: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat	Discussion
Reptiles			
Alameda striped racer *Coluber constrictor lateralis* (Formerly known as: Alameda whipsnake *Masticophis lateralis euryxanthus*)	FT/ST/–	Lives on slopes and in ravines where chaparral shrubs and oak trees form a vegetative mosaic with grasslands. Often found in association with rock outcrops that support an abundance of prey species such as western fence lizard.	The CNDDB lists several occurrences within 5 miles of the project site. The site has preferred prey items such as lizards, and shrubs and grasslands. However, the site is isolated from known populations and too open to provide suitable cover for the species. No potential to occur.
Birds			
Alameda song sparrow *Melospiza melodia pusillula*	–/–/CSC	Found in tidal salt marshes on the fringes of south and central San Francisco Bay. Nests primarily in pickleweed and marsh gumplant.	The CNDDB has two presumed extant occurrences within 5 miles of the project site. These observations were both made in salt marsh along the edge of San Francisco Bay. Not expected to occur due to lack of tidal salt marsh. No potential to occur.
Bank swallow *Riparia riparia*	–/ST/–	Nests in large colonies dug into cliffs or stream banks. Forages for insects over water.	The CNDDB has one presumed extant occurrence within 5 miles of the project site. No suitable nesting habitat on the site. No potential to occur.
Burrowing owl *Athene cunicularia*	–/–/CSC	Found in sparsely vegetated open habitats (e.g., grasslands, agricultural areas) with ground squirrel burrows or other features (e.g., culverts, pipes, and debris piles) suitable for nesting.	The CNDDB has one occurrence within 5 miles of the project site. The presence of homeless encampments, and the likely presence of feral cats and dogs, limits the suitability of the site for burrowing owls. There are several appropriate ground squirrel burrows on the site, and suitable grasslands for foraging. Moderate potential to occur.
California black rail *Laterallus jamaicensis coturniculus*	–/ST/CFP	Lives primarily in salt marshes bordering larger bays; also found in brackish and freshwater marshes.	The CNDDB has three occurrences within 5 miles of the site. Not expected to occur due to lack of tidal salt marsh or freshwater marsh on the project site. No potential to occur.
California least tern *Sterna antillarum browni*	FE/SE/–	Nests in colonies on open beaches from Baja California north to San Francisco Bay. Primarily feeds upon small fish.	The CNDDB has two occurrences within 5 miles of the site. There is no suitable beach habitat on the site. No potential to occur.

Table 6.F: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat	Discussion
Ridgway's rail *Rallus obsoletus obsoletus* (Formerly known as: California clapper rail *Rallus longirostris obsoletus)*	FE/SE/CFP	Lives in tidal salt marshes with sloughs and substantial cordgrass (*Spartina* sp.) cover.	The CNDDB has three presumed extant occurrences within 5 miles of the site. The site is isolated from these occurrences by extensive urban development. There is no tidal salt marsh on the site. No potential to occur.
Golden eagle *Aquila chrysaetos*	–/–/CFP	Hunts over rolling foothills and mountain areas. Nests in cliff-walled canyons or large trees in open areas.	The CNDDB has one occurrence within 5 miles of the site. The site is too urban and developed to support a suitable prey base for nesting eagles. No potential to occur.
Salt marsh common yellowthroat *Geothlypis trichas sinuosa*	–/–/CSC	Found in salt, brackish, and freshwater marshes; and riparian woodlands. Nests on or near ground in low vegetation.	The CNDDB has four presumed extant occurrences within 5 miles of the project site. Not expected to occur due to lack of salt, freshwater, or brackish marsh on the site. No potential to occur.
Tricolored blackbird *Agelaius tricolor*	–/ST/CSC	Breeds in large colonies near freshwater, preferably emergent wetland such as cattails and tules but also in thickets of willow and other shrubs. Requires nearby foraging areas with large numbers of insects.	The CNDDB has one occurrence within 5 miles of the site. There are no large patches of cattails, tules, or willows on the site. Due to its developed, urban setting, the site does not support large numbers of insects. Therefore, there is no suitable nesting or foraging habitat on site. No potential to occur.
Western snowy plover (Pacific coast population) *Charadrius alexandrinus nivosus*	FT/–/–	Nests on sandy beaches and salt pond levees.	The CNDDB has two presumed extant occurrences within 5 miles of the site. Not expected to occur due to the site's distance from Bay shoreline and consequent lack of habitat. No potential to occur.
White-tailed kite *Elanus leucurus*	–/–/CFP	Hunts in open grassland habitats with sparse shrubs and trees. Nests near the top of trees.	The CNDDB has one presumed extant occurrence within 5 miles of the project site. Suitable nesting and foraging habitat present. Often seen near developed areas. Moderate potential to occur.

Table 6.F: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat	Discussion
Mammals			
Pallid bat *Antrozous pallidus*	–/–/CSC	Roosts in caves, tunnels, and buildings, under bridges, and in tree hollows; forages over a variety of habitats. Most common in open, dry habitats with rocky areas for roosting.	The CNDDB has two presumed extant occurrences mapped to within 5 miles of the site. Not expected to occur on the site due to lack of suitable roost sites. No potential to occur.
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/SE/CFP	Tidal salt marshes of San Francisco Bay and its tributaries. Requires tall, dense pickleweed (*Salicornia* spp.) for cover.	The CNDDB has eight presumed extant occurrences mapped to within 5 miles of the site. The site lacks tidal salt marsh. No potential to occur.
Salt-marsh wandering shrew *Sorex vagrans halicoetes*	–/–/CSC	Tidal salt marshes with abundant driftwood and other debris for shelter and foraging.	The CNDDB has one presumed extant occurrence within 5 miles of the project site. The occurrence is within the Don Edwards San Francisco Bay National Wildlife Refuge. The site lacks tidal salt marsh. No potential to occur.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	–/–/CSC	Chaparral and woodlands. Feeds mainly on woody plants. An agile climber that builds conspicuous stick houses in trees and on the ground.	The CNDDB has one presumed extant occurrence within 5 miles of the site. No woodrat houses were observed on the site during the reconnaissance survey. The site is more open than woodrats generally prefer. No potential to occur.
Western mastiff bat *Eumops perotis californicus*	–/CSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, chaparral, and urban. Roosts in crevices in cliffs, large rock outcroppings, and tall buildings.	The CNDDB contains only one occurrence within 5 miles of the site, based on a specimen collected from "Hayward" in 1899. No suitable roost sites are present on the site. No potential to occur.
Fish			
Steelhead - central California coast Distinct Population Segment *Oncorhynchus mykiss irideus*	FT/–/–	Requires cool, swift moving perennial streams with clean, unsilted gravel beds for spawning and egg deposition.	There are no perennial streams on the site. No potential to occur.

Table 6.F: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat	Discussion
Delta smelt *Hypomesus transpacificus*	FE/ST/–	Lives in estuarine waters from the confluence of the Sacramento and San Joaquin Rivers to San Pablo Bay. Tolerates a wide range of water salinities. Usually spawns in tidally influenced backwater channels.	There are no CNDDB records within 5 miles of the site because the site is outside the range of the species. Furthermore there are no brackish streams or sloughs on the site. No potential to occur.
Longfin smelt *Spirinchus thaleichthys*	FC/ST/CSC	Spends its adult life in bays, estuaries, and nearshore coastal areas, and migrates into freshwater rivers to spawn.	There are no perennial streams or rivers on the site. No potential to occur.

Source: LSA (2019).
*Status:
FE = Federally endangered
FC = Federal candidate species
FT = Federally threatened
SE = State endangered
ST = State threatened
SC = State candidate for listing
CSC = California Species of Special Concern
CFP = California Fully Protected Species

The General Plan EIR identified potentially significant impacts related to special-status species, and identified General Plan Policies NR-1.2 and NR-1.3 to reduce this impact to a less-than-significant level. With implementation of SCA BIO-1 and SCA BIO-2, which implement General Plan Policies NR-1.2 and NR-1.3, this impact would be less than significant.

SCA BIO-1: Consistent with General Plan Policies NR-1.2 and NR-1.3, a qualified biologist shall identify, map, and make recommendations for avoiding White-tailed kite during construction activities on the project site, if present. Specifically, to the extent feasible, vegetation removal activities shall occur during the non-nesting season (September 1 to January 31). For any construction activities conducted during the nesting season, a qualified biologist shall conduct a preconstruction nest survey of all trees or other suitable nesting habitat in and within 250 feet of the limits of work. The survey shall be conducted no more than 15 days prior to the start of work. If the survey indicates the presence of nesting birds, the biologist shall determine an appropriately sized buffer around the nest in which no work shall be allowed until the young have successfully fledged. The size of the nest buffer shall be determined by the biologist and shall be based on the nesting species and its sensitivity to disturbance. In general, buffer sizes of up to 250 feet for raptors and 50 feet for other birds should suffice to prevent substantial disturbance to nesting birds, but these buffers may be increased or decreased, as appropriate, depending on the bird species and the level of disturbance anticipated near the nest.

SCA BIO-2: Consistent with General Plan Policies NR-1.2 and NR-1.3, a qualified biologist shall identify, map, and make recommendations for avoiding burrowing owls during construction activities on the project site, if present. Specifically, no more than 14 days prior to any ground disturbing activities, a qualified biologist shall conduct a preconstruction/take avoidance survey for burrowing owls using methods described in Appendix D of the CDFW Staff Report on Burrowing Owl Mitigation (Staff Report). If no burrowing owls are detected during the initial take avoidance survey, a final survey shall be conducted within 24 hours prior to ground disturbance to confirm that owls are still absent.

If take avoidance surveys conducted during the non-breeding season (September 1 to January 31) identify any burrowing owls within the construction footprint, individuals may be excluded from burrows using one-way doors provided that a Burrowing Owl Exclusion Plan is developed and approved by CDFW prior to implementation.

If burrowing owls are found within the construction footprint during the breeding season, occupied burrows shall be avoided by establishing buffers around the burrows in which no work shall be allowed until a qualified biologist has determined that the nest attempt has failed or that young have fledged and can forage independently of the adults. A minimum buffer of at least 250 feet shall be maintained during the breeding season around active burrows. Burrowing owls present on site after February 1 shall be assumed to be nesting on or adjacent to the site unless focused monitoring by a qualified biologist familiar with burrowing owl reproductive behavior indicates that the observed individual is unpaired or that egg-laying has not yet begun. A Burrowing Owl Exclusion Plan will be developed and approved by CDFW prior to implementation.

6.4.2.2 Riparian Habitat and Sensitive Natural Communities *(Criterion b)*

No rivers or riparian habitat were observed on the project site during the reconnaissance survey. The only CNDDB occurrence for a special status terrestrial community within five miles of the property is Northern Coastal Salt Marsh, which is not present on the site. Therefore, the proposed project would have no impact related to riparian habitat and sensitive natural communities.

6.4.2.3 Wetlands *(Criterion c)*

A formal wetland delineation was not conducted during the reconnaissance survey; however, the biologist noted small areas where water had ponded on the northern side of the site. These areas supported cattails (*Typha* sp.), an obligate wetland plant.

A jurisdictional wetland delineation should be conducted for the site and, if necessary, appropriate permits and authorizations from the U.S. Army Corps of Engineers (Corps), CDFW, and Regional Water Quality Control Board (RWQCB) shall be obtained prior to the issuance of grading permits. The loss of any jurisdictional wetlands must be mitigated for at a minimum of a 1:1 ratio, or as required by permits.

The SH BART/Mission Blvd SEIR identified potentially significant impacts related to wetlands, and identified Mitigation Measure Bio-1, which is shown below and would be incorporated into the proposed project as SCA BIO-3, to reduce this impact to a less-than-significant level.

> **SCA BIO-3:** Consistent with General Plan Policy NR-1.3 and SH BART/Mission Blvd SEIR Mitigation Bio-1, the following steps shall be taken to protect wetlands and other waters of the US.
>
> a. In order to ensure that all jurisdictional wetlands and other waters are identified, a formal jurisdictional delineation of wetlands and other waters shall be conducted on the project site. The jurisdictional delineation should follow the methodology set forth in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual and should be submitted to the Planning Division and the Corps for verification prior to issuance of a grading permit.
>
> b. The proposed project shall avoid development on, and impacts to, identified wetlands and other waters.
>
> c. If avoidance of wetlands or other waters is not possible, then impacts should be minimized to the maximum extent that is practicable and these measures should be incorporated into the project design. If impacts to wetlands or other waters cannot be minimized and are unavoidable, these impacts shall be compensated for by developing and implementing a comprehensive mitigation plan, acceptable to the Corps, CDFG, and RWQCB to offset these losses. It is recommended that mitigation be conducted within the project site. If this is not possible, then an off-site mitigation area should be selected that is as close to the project site as possible and acceptable to the resource agencies. Necessary State and federal permits shall be obtained prior to any work within or in close proximity to wetlands or other waters of the U.S and submitted to Planning Division prior to issuance of a grading permit.

Therefore, with implementation of SCA BIO-3, this impact would be less than significant.

6.4.2.4 Wildlife Movement and Corridors *(Criterion d)*

The project site is surrounded by existing and approved development, and therefore does not provide any corridors for terrestrial wildlife movement between populations. As noted in the SH BART/Mission Blvd SEIR, the proposed project would not interfere substantially with the movement of any native resident or migratory wildlife species as it is located in an urban area where such species are not commonly found. In addition, implementation of General Plan Policy NR-1.1, which limits new development in important native wildlife habitat, ensures that new development would not limit access or create barriers to wildlife corridors and the proposed project would comply with this policy.

6.4.2.5 Local Policies *(Criterion e)*

The City of Hayward's Tree Preservation Ordinance is applicable to "to new development, under-developed properties, or undeveloped properties." It goes on to state that "On developed single family properties, only those trees that were required to be planted as part of the Zoning Ordinance or were required to be planted or protected in place as a condition of approval for development are Protected Trees that require a permit for trimming or cutting, relocation or removal." Any tree (including planted eucalyptus and other non-native ornamentals) with a trunk diameter at breast height (dbh) of 8 inches or more is considered protected. Most native species, including Coast live oak (*Quercus agrifolia*) and California buckeye (*Aesculus californica*), are protected if they have a dbh of 4 inches or more. All of the 20 trees located on the project site would be protected.[13] However, the project applicant would be required to obtain a tree removal permit and to satisfy mitigations for tree removal outlined in the Ordinance prior to the removal of any trees; therefore, this impact would be less than significant. In addition, implementation of General Plan Policy HQL-8.3 ensures that new development complies with the City's Tree Preservation Ordinance and the proposed project would comply with this policy.

6.4.2.6 Habitat Conservation Plans *(Criterion f)*

As determined by the General Plan EIR and SH BART/Mission Blvd SEIR, the project site is not located within any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, and there would be no impact.

6.4.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents considered throughout this analysis, the proposed project would not result in any more severe impacts than those identified in the Previous CEQA Documents, nor would it result in new significant impacts related to biological resources that were not identified in the Previous CEQA Documents. Implementation of SCA BIO-1, SCA BIO-2, and SCA BIO-3 would ensure that potential impacts associated with biological resources would be less than significant.

[13] HortScience | Bartlett Consulting, 2019. *Preliminary Arborist Report, 29212 Mission Blvd, Hayward, CA.* June 13.

6.5 CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☐	☐	☒
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☐	☐	☒

6.5.1 Previous CEQA Documents Findings

The General Plan EIR identified less-than-significant impacts related to cultural resources, and no mitigation measures were necessary. Specifically, Policy LU-8.3 identifies compliance with the City's Historic Preservation Ordinance to ensure protection of archaeological sites and Policy LU-8.4 ensures that identified archaeological sites are professionally documented. The SH BART/Mission Blvd SEIR identified potentially significant impacts to built-environment historic resources and identified mitigation measures to reduce the impacts to less-than-significant levels. Standard conditions of approval were identified to address potential impacts to archeological resources and human remains.

6.5.2 Project Analysis

Although impacts to cultural resources were generally evaluated in the General Plan EIR and the SH BART/Mission Blvd SEIR, impacts to such resources are location specific. Therefore, potential impacts to cultural resources at the project site are evaluated and discussed below.

6.5.2.1 Historical Resources *(Criterion a)*

The project site is currently vacant and does not include any historic structures. Additionally, there are no historic buildings located within the vicinity of the project site. Therefore, the proposed project would not result in a substantial adverse change to a historical resource.

6.5.2.2 Archaeological Resources and Human Remains *(Criteria b and c)*

The proposed project would involve grading and excavation activities up to depths of approximately 15 feet below grade to construct the proposed buildings. There are no known archaeological

resources or human remains within or adjacent to the project site.[14] However, because the proposed project would include excavation of soil, there is potential to impact unknown archaeological resources or human remains, as noted in the Previous CEQA Documents. However, as noted in the SH BART/Mission Blvd SEIR, the City utilizes standard conditions of approval for grading operations that would be implemented, as the proposed project would include development on an undeveloped site. These standard conditions of approval, which would be incorporated into the proposed project as SCA CUL-1, require any archaeological resources or human remains that are discovered to be evaluated by a qualified professional, and that grading operations be halted until mitigation plans are formulated and implemented, if necessary. Therefore, with implementation of the SCA CUL-1, this impact would be less than significant.

> **SCA CUL-1:** Should an archaeological deposit or human remains be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology shall be contacted to assess the situation, determine if the deposit qualifies as a historical resource, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the deposit is found to be significant (i.e., eligible for listing in the California Register of Historical Resources), the applicant shall be responsible for funding and implementing appropriate mitigation measures. If human remains are encountered, the County Coroner shall also be contacted to complete an assessment. All excavation, analysis, and reburial of Native American human remains shall be done in consultation with the Native American Most Likely Descendent, as identified by the California Native American Heritage Commission.

6.5.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents considered throughout this analysis, the proposed project would not result in any more severe impacts than those identified in the Previous CEQA Documents, nor would it result in new significant impacts related to cultural resources that were not identified in the Previous CEQA Documents. Implementation of SCA CUL-1 would ensure that potential impacts associated with cultural resources would be less than significant.

[14] LSA Associates, Inc., 2019. *Cultural Resources Background Research for the 29212 Mission Boulevard Project, Hayward, Alameda County, California*.

6.6 ENERGY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?	☐	☐	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☐	☒	☐

6.6.1 Previous CEQA Documents Findings

Energy usage was evaluated in the General Plan EIR in Chapter 21.6, Energy and the environmental and regulatory setting of the Hayward Planning Area with respect to energy conservation is described in detail in Section 7.6 Natural Resources: Energy Resources and Efficiency of the General Plan Background Report. Pursuant to Section 15150 of the State CEQA Guidelines, the Background Report was incorporated into the General Plan EIR by reference.

The SH BART/Mission Blvd SEIR addresses the consumption of nonrenewable resources, including increased energy consumption, in Chapter 9, Mandatory CEQA Topics. The SH BART/Mission Blvd SEIR found that the SH BART/Mission Blvd FBC Project would facilitate redevelopment of underutilized parcels and construct new civic spaces (e.g., linear park, park). While this would require additional energy of several types for construction and for on-going use, it would not require the construction of major new lines to deliver energy, and service providers anticipate being able to provide the capacity to serve projected levels of development. Furthermore, the SH BART/Mission Blvd SEIR identified that to the extent that growth throughout Hayward is partly an expression of regional demand, redevelopment of existing neighborhoods represents a more efficient allocation of nonrenewable resources than would suburban expansion into undeveloped greenfields in other jurisdictions or locations.

6.6.2 Project Analysis

The proposed project would increase the demand for electricity, natural gas, and gasoline. The discussion and analysis provided below is based on data included in the CalEEMod output, which is included in Appendix A.

6.6.2.1 Energy Use *(Criterion a)*

Construction Period. The anticipated construction schedule assumes that the proposed project would be built over 33 months. The proposed project would require grading, site preparation, and building activities during construction.

Construction of the proposed project would require energy for the manufacture and transportation of construction materials, preparation of the site for grading activities, and construction of the project. Petroleum fuels (e.g., diesel and gasoline) would be the primary sources of energy for these activities. In order to increase energy efficiency on the site during project construction, the project applicant would be required to restrict equipment idling times to five minutes or less and would require construction workers to shut off idle equipment, as required by BAAQMD's Basic Construction Mitigation Measures (see SCA AIR-1). Energy usage on the project site during construction would be temporary in nature and would be relatively small in comparison to the State's available energy sources.

Operation Period. Energy use consumed by the proposed project would be associated with natural gas use and electricity consumption from the proposed building operations and fuel used for vehicle trips associated with the project, as discussed below. Table 6.G, below, shows the estimated annual energy use for the proposed project.

Table 6.G: Estimated Annual Energy Use of Proposed Project

Land Use	Electricity Use (kWh per year)	Natural Gas Use (therms per year)	Gasoline (gallons per year)
Townhouse	945,119	42,950	91,527
Commercial	29,061	128	4,178
Daycare	35,733	1,326	25,324
Open Space	0	0	0
Parking Garages	707,616	0	0
Parking Spaces	13,440	0	0
Total	**1,730,969**	**51,404**	**121,029**

Source: LSA (July 2019).

Building Operations. Energy and natural gas consumption was estimated using default energy intensities by land use type in CalEEMod. In addition, the proposed buildings would comply with the latest CALGreen standard building measures and Title 24 standards, which were included in CalEEMod inputs.

As shown in Table 6.G, the estimated potential increased electricity demand associated with the proposed project would be 1,730,969 kilowatt-hours (kWh) per year. In 2018, California consumed approximately 281,120 gigawatt-hours (GWh) (281,120,193,430 kWh).[15] Of this total, Alameda County consumed 10,343 GWh or 10,343,892,264 kWh.[16] Therefore, electricity demand associated with the proposed project would be approximately 0.02 percent of Alameda County's total electricity demand.

In addition, as shown in Table 6.G, the estimated potential increased natural gas demand associated with the proposed project would be 51,404 therms per year. In 2017, California

[15] California Energy Commission, 2018. Energy Consumption Data Management Service. Electricity Consumption by County. Website: www.ecdms.energy.ca.gov/elecbycounty.aspx (accessed July 2019).

[16] Ibid.

consumed approximately 12,638 million therms, while Alameda County consumed approximately 377 million therms.[17] Therefore, natural gas demand associated with the proposed project would only be approximately 0.01 percent of Alameda County's total natural gas demand.

The expected energy consumption during operation of the proposed project would be consistent with typical usage rates for townhome residential and commercial uses; however, energy consumption is largely a function of personal choice and the physical structure and layout of buildings. In addition, as indicated above, the proposed project would be constructed to the latest CALGreen standard building measures and Title 24 standards, which would help to reduce energy and natural gas consumption. The project may also consist of an all-electric energy supply, with no natural gas use, which may further lower the potential energy use over the life of the project.

Transportation-Related Energy Use. In addition to energy use generated by the ongoing operations of the residential and commercial use, the proposed project would result in energy usage associated with gasoline to fuel project-related trips. Based on CalEEMod and the trip generation included in the Transportation Impact Study prepared for the project (see Appendix E), the proposed project would result in approximately 2,662,632 vehicle miles traveled (VMT) per year, including reductions taken for the site's proximity to the South Hayward BART Station. The average fuel economy for light-duty vehicles (autos, pickups, vans, and SUVs) in the United States has steadily increased from about 14.9 miles per gallon (mpg) in 1980 to 22.0 mpg in 2015.[18] Therefore, using the USEPA fuel economy estimates for 2015, the proposed project would result in the consumption of approximately 121,029 gallons of gasoline per year, as shown in Table 6.G. In 2015, vehicles in California consumed approximately 15.1 billion gallons of gasoline.[19] Therefore, gasoline demand generated by vehicle trips associated with the proposed project would be a minimal fraction of gasoline and diesel fuel consumption in California.

It is likely that gasoline and vehicle trips generated by the proposed project would also be lower because the project consists of a mixed-use, walkable, sustainable neighborhood with residential and commercial uses. The proposed project would also include the extension of over 1,400 lineal feet of a multi-use trail, 72 bicycle parking spaces, and would be located approximately 0.3 miles from the South Hayward BART Station. Therefore, the proposed project would support the ability to use alternative modes of transportation, would promote initiatives to reduce vehicle trips and vehicle miles traveled, and would increase the use of alternate means of transportation, which would allow for a decreased dependence on nonrenewable energy resources.

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17 California Energy Commission, 2018. Energy Consumption Data Management Service. Gas Consumption by County. Website: www.ecdms.energy.ca.gov/gasbycounty.aspx (accessed July 2019).

18 U.S. Department of Transportation. "Table 4-23: Average Fuel Efficiency of U.S. Light Duty Vehicles." Website: www.bts.gov/archive/publications/national_transportation_statistics/table_04_23 (accessed July 2019).

19 California Energy Commission, 2017. California Gasoline Data, Facts, and Statistics. Website: www.energy.ca.gov/almanac/transportation_data/gasoline (accessed July 2019).

Conclusion. Given the above, the proposed project would implement the General Plan's energy-related policies that promote jobs-housing balance, growth and infill development, green building and landscaping, complete neighborhoods, energy efficiency, and bicycling, walking, and transit amenities, and parks access. As such, the proposed project would not result in the wasteful, inefficient or unnecessary consumption of fuel or energy and would incorporate renewable energy or energy efficiency measures into building design, equipment use, and transportation. Therefore, construction and operation period impacts related to consumption of energy resources would not result in new or more significant impacts related to energy than were identified in the Previous CEQA Documents.

6.6.2.2 Conflict or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency *(Criterion b)*

In 2002, the Legislature passed Senate Bill 1389, which required the California Energy Commission (CEC) to develop an integrated energy plan every two years for electricity, natural gas, and transportation fuels, for the California Energy Policy Report. The plan calls for the State to assist in the transformation of the transportation system to improve air quality, reduce congestion, and increase the efficient use of fuel supplies with the lowest cost to environmental and energy sources. To further this policy, the plan identifies a number of strategies, including assistance to public agencies and fleet operators in implementing incentive programs for zero emission vehicles and their infrastructure needs, and encouragement of urban designs that reduce VMT and accommodate pedestrian and bicycle access.

The CEC recently adopted the 2017 Integrated Energy Policy Report.[20] The 2017 Integrated Energy Policy Report provides the results of the CEC's assessments of a variety of energy issues facing California. Many of these issues will require action if the State is to meet its climate, energy, air quality, and other environmental goals while maintaining energy reliability and controlling costs. The 2017 Integrated Energy Policy Report covers a broad range of topics, including implementation of Senate Bill 350, integrated resource planning, distributed energy resources, transportation electrification, solutions to increase resiliency in the electricity sector, energy efficiency, transportation electrification, barriers faced by disadvantaged communities, demand response, transmission and landscape-scale planning, the California Energy Demand Preliminary Forecast, the preliminary transportation energy demand forecast, renewable gas (in response to Senate Bill 1383), updates on Southern California electricity reliability, natural gas outlook, and climate adaptation and resiliency.

As indicated above, energy usage on the project site during construction would be temporary in nature. In addition, energy usage associated with operation of the proposed project would be relatively small in comparison to the State's available energy sources and energy impacts would be negligible at the regional level. Further, the project is mixed-use and located on an infill site less than half a mile to BART and includes a robust network of walking paths and outdoor spaces.

[20] California Energy Commission, 2017. *2017 Integrated Energy Policy Report*. Publication Number: CEC-100-2017-001-CMF.

Because California's energy conservation planning actions are conducted at a regional level, and because the project's total impact to regional energy supplies would be minor, the proposed project would not conflict with California's energy conservation plans as described in the CEC's 2017 Integrated Energy Policy Report. As shown above, the project would avoid or reduce the inefficient, wasteful, and unnecessary consumption of energy and not result in any irreversible or irretrievable commitments of energy. Therefore, the proposed project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation resulting in a less than significant impact related to energy use.

6.6.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to energy than those identified in the Previous CEQA Documents.

6.7 GEOLOGY AND SOILS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:						
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☐	☒	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☐	☒	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☐	☒	☐
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☐	☐	☒

6.7.1 Previous CEQA Documents Findings

The General Plan EIR determined that impacts related to geology and soils would be less than significant and no mitigation measures were necessary. Specifically, General Plan Policies HAZ-2.1, HAZ-2.2, HAZ-2.3, HAZ-2.4, NR-6.4, and NR-6.5 would ensure that new development is seismically sound and in compliance with applicable Building Codes and other safety provisions related to geology and soils. The SH BART/Mission Blvd SEIR identified potentially significant impacts related to earthquake-related hazards, soil erosion, and unstable soils, and identified mitigation measures to reduce the impacts to less-than-significant levels.

6.7.2 Project Analysis

Unless otherwise noted, the information presented in this section is based on the site-specific geotechnical reports[21, 22, 23] and peer reviews prepared for the proposed project,[24] in compliance with General Plan Policies HAZ-2.1, HAZ-2.2, HAZ-2.3, HAZ-2.4, NR-6.4, and NR-6.5 and SH BART/Mission Blvd SEIR Mitigation Measures Geo-1 and Geo-2. In addition to compliance with the applicable California Building Code, the following recommendations are included in the geotechnical reports, and are referenced in the analysis below.

- No habitable structures should be permitted within the mapped setback zones;
- Building areas underneath concrete slab-on-grade floors should be capped by a layer of low/non-expansive soil. Additional measures may include deepened footings and moisture condition of the footing excavations;
- Proposed fills should be founded on base keys embedded at least 2 feet into native soils at the site;
- Residential buildings should be supported on a post-tensioned concrete slab-on-grade foundation system;
- For 2:1 slopes, shear pins should be installed at the mid-slope bench. Piers should have a maximum depth of 30 feet and a maximum spacing of 10 feet (center to center). The shear pins should have a capacity of at least 125 kips;

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21 Earth Systems Pacific, 2017. *Geologic Hazards Evaluation and Geotechnical Feasibility Study for the Proposed Multifamily Residential Development at 29212 Mission Boulevard, Hayward, California.* September 26.

22 Earth Systems Pacific, 2017. *Addendum to Geologic Hazards Evaluation and Geotechnical Feasibility Study for the Proposed Multifamily Residential Development at 29212 Mission Boulevard, Hayward, California.* December 15.

23 Earth Systems Pacific, 2018. *Geologic Hazards Evaluation and Geotechnical Feasibility Study for the Proposed Multifamily Residential Development NW of 29212 Mission Boulevard, Hayward, California.* September 27.

24 Richardson, Louis A., P.G., C.E.G., 2019. *Geologic Peer Review – Geologic Hazards Evaluation Reports for Proposed Multifamily Residential Developments at 29212 Mission Boulevard and the Caltrans – Tennyson Road Property located northwest of 29212 Mission Boulevard in Hayward, California.* March 22.

- For 3:1 slopes, shear pins should be installed beneath the planned site retaining wall. The sheer pins should have a maximum depth of 20 feet and a maximum spacing of 10 feet (center to center). The shear pins should have a capacity of at least 125 kips;

- Retaining walls should be supported by a drilled, cast-in-place pier and grade-beam foundation system;

- Where utilities or subsurface infrastructure enter the fault setback zone or cross the fault they should be reinforced and should cross the fault at right angles; and

- Utilities and infrastructure should be easily accessible and inspected regularly for damage and deficient conditions should be mitigated as soon as reasonably possible.

6.7.2.1 Seismic Hazards *(Criterion a)*

The project site is located within the Coast Ranges geomorphic province, which includes numerous active faults identified by the California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act. CGS defines an active fault as one that has ruptured during the Holocene Epoch (i.e., the last 11,000 years). The probability of one or more large earthquakes (magnitude 6.7 or greater) occurring in the Bay Area between 2014 and 2044 is about 72 percent.[25]

Fault Rupture. Surface fault rupture occurs when the ground surface is broken due to fault movement during an earthquake. Fault rupture is generally expected to occur along active fault traces. Areas susceptible to fault rupture are delineated by the CGS Alquist-Priolo Earthquake Fault Zones and require specific geological investigations prior to certain kinds of development to reduce the threat to public health and safety and to minimize the loss of life and property posed by earthquake-induced ground failure.

The project site is not located within an earthquake fault zone as defined by the current published State Zones of Required Investigation maps. Soil investigations at the project site located a feature on the eastern portion of the site that required further investigation due to the appearance of faulting. Further geotechnical investigations determined that based on the discontinuous nature of this feature, the curved nature of the previously mapped faults in the area, and the decision by the State to not include the feature in the mapped earthquake fault zones, the feature may not be tectonic (i.e., a fault) in nature and that thrusting at the site may represent the toe of an ancient landslide.

Although the study concluded that the feature is likely not tectonic, the soils at the site show evidence of compressional deformation near the possible faulting. In addition, prior geotechnical investigations to the north and south have mapped potentially active faults nearby, and other areas within the potential landslide complex have shown evidence of creep or landslide related deformation. Therefore, the potential for surface fault rupture cannot be completely discounted. To address this potential issue, the proposed project would include a 25-foot setback from the

[25] Field, E.H., and 2014 Working Group on California Earthquake Probabilities, 2015, UCERF3: *A New Earthquake Forecast for California's Complex Fault System, USGS Fact Sheet 2015-3009*. March.

potential feature, which is consistent with the recommendations of the geotechnical investigations prepared for the site. This impact would be less than significant.

Strong Seismic Groundshaking. Seismic groundshaking (or groundshaking) generally refers to all aspects of motion of the earth's surface resulting from an earthquake and is normally the major cause of damage in seismic events. The extent of ground shaking is controlled by the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. A moderate to major earthquake on the San Andreas, Hayward, or Calaveras faults could cause severe groundshaking at the site.

The proposed project would be required to comply with the most recent California Building Code (Title 24, California Code of Regulations), which provides for stringent construction requirements on projects in areas of high seismic risk. The project design and construction are required to conform with, or exceed, current best standards for earthquake resistant construction in accordance with the California Building Code and with the generally accepted standards of geotechnical practice for seismic design in Northern California. As recommended in the geotechnical investigations, the proposed project would conform to the California Building Code Standards for seismic shaking, including horizontal and vertical accelerations, and this impact would be less than significant.

Ground Failure. Soil liquefaction is primarily associated with saturated soil layers located close to the ground surface. During ground shaking, these soils lose strength and acquire "mobility" sufficient to permit both horizontal and vertical movements. Soils that are most susceptible to liquefaction are clean, loose, uniformly graded, saturated, fine-grained sands that lie relatively close to the ground surface. However, loose sands that contain a significant amount of fines (silt and clay) may also liquefy. The project site is underlain by medium stiff to stiff clayey soils and blocks of bedrock which are not susceptible to liquefaction. Additionally, the project site is not within a State-defined liquefaction hazard zone. Therefore, the potential for liquefaction, lurching, and lateral spreading at the project site is considered to be low, and this impact would be less than significant.

Landslides. The project site is not located within a State-defined landslide hazard zone. The CGS maps the site as underlain on the northeastern portion by dormant landslide deposits. The hills in the vicinity of the project site were significantly affected by landsliding; however, the deposits are offset by faulting indicating an age range of 48,000 to 78,000 years since the last significant movement. These landslide deposits are mapped as dormant, but could be reactivated by over-steepening by erosion, grading, or seismic activity. Additionally, modelling on the project site suggests that failures may occur under dynamic conditions. The proposed project would implement the recommendations of the geotechnical report, which include the use of shear pins in the slope and beneath the planned retaining walls, which would ensure impacts related to landslides would be less than significant.

6.7.2.2 Soil Erosion *(Criterion b)*

Soil erosion, which is discussed in detail in Section 6.10, Hydrology and Water Quality, could occur during project construction when excavation and grading would expose soils. As described in Section 6.10, compliance with the requirements of the Construction General Permit and incorporation of

construction BMPs would ensure that the proposed project would have a less-than-significant impact related to erosion and loss of topsoil.

6.7.2.3 Unstable Soils *(Criterion c)*

As previously described in Section 6.7.2.1, the project site is located in an area susceptible to earthquake-induced landslide. However, compliance with recommendations from the Geotechnical Study would reduce the potential impacts related to seismically-induced landslides to a less-than-significant level.

As also previously discussed in Section 6.7.2.1 above, the Geotechnical Study prepared for this project indicates the potential for liquefaction, lurching, and lateral spreading at the project site is low. Therefore, the risks to people and structures due to liquefaction, lurching, and lateral spreading would represent a less-than-significant impact.

Subsidence or collapse can result from the removal of subsurface water resulting in either catastrophic or gradual depression of the surface elevation of the project site. The only removal of subsurface water that may occur as part of the project would be related to temporary dewatering of excavations during construction and drainage of the slope to increase slope stability. These types of dewatering activities of shallow groundwater would not be of a magnitude that could result in subsidence or collapse of soils. Therefore, potential risks to people and structures as a result of subsidence or collapse are less than significant.

6.7.2.4 Expansive Soils *(Criterion d)*

Expansive soils are characterized by the potential for shrinking and swelling as the moisture content of the soil decreases and increases, respectively. Shrink-swell potential is influenced by the amount and type of clay minerals present and can be measured by the percent change of the soil volume. The geotechnical investigations determined that soils on the project site have high expansion potential. The geotechnical investigations recommended that building areas underneath concrete slab-on-grade floors be capped by a layer of low/non-expansive soil. Compliance with recommendations in the geotechnical investigations would ensure potential impacts related to expansive soil would be less than significant.

6.7.2.5 Alternative Wastewater Disposal *(Criterion e)*

Development of the proposed project would not involve the use of septic tanks or alternative wastewater disposal systems. Therefore, the proposed project would have no impact related to septic tanks or alternative wastewater disposal systems.

6.7.2.6 Paleontological Resources *(Criterion f)*

The proposed project would involve grading and excavation activities up to depths of approximately 15 feet below grade to construct the proposed buildings. Therefore, there is potential to impact unknown paleontological resources, as noted in the Previous CEQA Documents. However, as required by General Plan Policy NR-7.2 and noted in the SH BART/Mission Blvd SEIR, the City utilizes SCAs for grading operations that would be implemented, as the proposed project would include development on an undeveloped site. These standard conditions of approval, which would be

incorporated into the project as SCA GEO-1, require any paleontological resources that are discovered to be evaluated by a qualified professional, and that grading operations be halted until mitigation plans and formulated and implemented, if necessary. Therefore, with implementation of the City's SCAs for grading on undeveloped sites, this impact would be less than significant.

> **SCA GEO-1:** Consistent with General Plan Policy NR-7.2, should paleontological resources be encountered during project subsurface construction activities, all ground-disturbing activities within 25 feet shall be redirected and a qualified paleontologist contacted to assess the situation, consult with agencies as appropriate, and make recommendations for the treatment of the discovery. If the paleontological resources are found to be significant and project activities cannot avoid them, measures shall be implemented to ensure that the project does not cause a substantial adverse change in the significance of the paleontological resource.

6.7.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents considered in this analysis, as well as the geotechnical investigations prepared for the proposed project, implementation would not result in any new or more significant impacts related to geology and soils than those identified in the Previous CEQA Documents. Implementation of SCA GEO-1 would ensure that potential impacts associated with paleontological resources would be less than significant.

6.8 GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☐	☒	☐

Greenhouse gases (GHGs) are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulfur Hexafluoride (SF_6).

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

These gases vary considerably in terms of Global Warming Potential (GWP), a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

6.8.1 Previous CEQA Documents Findings

6.8.1.1 Generation of Greenhouse Gas Emissions

As discussed in the General Plan EIR, construction activities would generate GHG emissions through the use of on- and off-road construction equipment in new development projects. While no project-specific details were known at the time the General Plan EIR was prepared, short-term construction emissions were estimated for worst-case, average annual levels of development assumed to occur under the General Plan through the year 2040. Average annual development assumptions were estimated by dividing the net increase in residential units and commercial building square feet associated with build out of the General Plan by 25 years. Construction emissions were estimated for this annualized average level development within the first full calendar year after anticipated General Plan adoption in order to obtain a "worst case" estimate of average annual construction-related GHG emissions. The General Plan EIR determined that total construction-related GHG emissions in 2015 would be approximately 1,186 metric tons (MT) of CO_2e per year.

The General Plan EIR estimated operational emissions from existing development in Hayward in the years 2005 and 2010, as well as projected "Business As Usual" GHG emissions associated with forecasted growth in the City's population and employment in 2020, 2040 and 2050. The 2020, 2040 and 2050 projections reflect both existing and proposed land uses and population and employment growth assumed in the proposed General Plan, but do not take into account any specific GHG reduction measures associated with State or federal legislative actions or the City's 2009 Climate Action Plan (CAP). The General Plan EIR found that any impacts resulting from GHG associated with implementation of the General Plan would be less than significant.

The SH BART/Mission Blvd SEIR found that the SH BART/Mission Blvd FBC Project would generate long-term operational GHG emissions over its lifetime. However, the SH BART/Mission Blvd SEIR found that the SH BART/Mission Blvd FBC Project's efficiency, which accounts for the population and employment, would be below the BAAQMD's GHG efficiency-based threshold and would not generate a level of GHG emissions that would have a significant impact on global climate change. As a result, this impact was determined to be less than cumulatively considerable and less than significant. The SH BART/Mission Blvd SEIR did not evaluate construction-period GHG emissions.

6.8.1.2 Consistency with Greenhouse Gas Reduction Plans

As discussed in the General Plan EIR, the General Plan integrates and updates the comprehensive, community-wide GHG emission reduction strategy contained in the City's 2009 CAP to achieve a GHG emission reduction target of 20 percent below 2005 levels by the year 2020 and sets the City

on course towards achieving ongoing GHG emission reductions in the future through the year 2050. The General Plan also recommended longer-term goals for GHG reductions of 61.7 percent below 2005 levels by the year 2040 and 82.5 percent below 2005 levels by the year 2050. The General Plan EIR summarizes the total GHG emission reductions from both State and federal regulatory actions, as well as locally based GHG emission reductions required to achieve the targets for 2020, 2040 and 2050 in Table 10.2 of the General Plan EIR. Legislative-adjusted projected emissions take into account GHG emission reductions as a result of State and federal regulatory actions. Additional net GHG emission reductions would be required to meet the proposed targets for 2020, 2040 and 2050; however, the General Plan EIR determined that the scale of reductions required to achieve the much more aggressive longer-term emission reduction goals will require significant improvements in the availability and/or cost of technology, as well as potential increased reductions from ongoing State and Federal legislative actions.

The General Plan EIR determined that the General Plan would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. In addition, the General Plan EIR determined that estimated GHG emissions per service population in 2020, 2040 and 2050 would be below the BAAQMD-recommended threshold of 6.6 MT CO_2e per service population per year. Although the current BAAQMD threshold is now 4.6 MT CO_2e per service population per year; GHG emissions estimated to be generated by General Plan implementation would continue to be below this threshold. Thus, the General Plan EIR determined that the General Plan would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment and impacts would be less than significant.

The SH BART/Mission Blvd SEIR identified that GHG reductions are addressed Statewide by the AB 32 Scoping Plan, regionally by the Bay Area 2010 Clean Air Plan, and locally through the CAP. The Scoping Plan strategies include development of mixed-use and transit-oriented developments as a method to reduce GHG emissions. Clean Air Plan reduction strategies are implemented through the Energy and Climate Measures and Transportation Control Measures (see Section 6.3.2.1 of this document for identified measures). The Hayward CAP also includes Actions 1.9, 1.10, 1.11, and 1.12, all of which pertain to smart growth principals including encouraging non-automotive modes of travel through support of higher-density, mixed-use developments in areas within 0.5 miles of transit stations; supporting affordable housing; and maximizing the number of residents that work within the City. The SH BART/Mission Blvd SEIR found that the SH BART/Mission Blvd FBC Project is consistent with the reduction strategies presented in these documents and therefore would result in no impact related to GHG reduction plan consistency.

6.8.2 Project Analysis

6.8.2.1 Generation of Greenhouse Gas Emissions *(Criterion a)*

Construction Greenhouse Gas Emissions. As previously noted, the General Plan EIR determined that total construction-related GHG emissions in 2015 would be approximately 1,186 MT of CO_2e per year; the SH BART/Mission Blvd SEIR did not evaluate construction-period GHG emissions.

The BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, lead agencies are encouraged to quantify and disclose GHG emissions that would occur during construction. Using CalEEMod, it is estimated that the proposed project would

generate approximately 1,867.3 MT CO_2e during construction of the project and approximately 74.7 MT CO_2e per year when amortized over 25 years, which is approximately 26 percent of the total annual construction emissions estimated in the General Plan EIR. Annual construction-related GHG emissions associated with the proposed project would be lower than the estimated average annual construction-related GHG emissions identified in the General Plan EIR. In addition, implementation of BAAQMD's Basic Construction Mitigation Measures, as required by SCA AIR-1, would reduce construction-related GHG emissions by reducing the amount of construction vehicle idling and by requiring the use of properly maintained equipment. As noted above, the BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions; therefore, project construction impacts associated with GHG emissions would be less than significant. Construction of the proposed project would not result in new or more significant impacts related to construction-period GHG emissions than identified in the Previous CEQA Documents.

Operational Greenhouse Gas Emissions. Development of the proposed project would contribute to the operational GHG emissions identified in the General Plan EIR and SH BART/Mission Blvd SEIR. Mobile-source GHG emissions would include project-generated vehicle trips to and from the project. Area-source emissions would be associated with activities such as landscaping and maintenance on the project site. Energy source emissions would be generated at off-site utility providers as a result of increased electricity demand generated by the project. Waste source emissions generated by the proposed project include energy generated by land filling and other methods of disposal related to transporting and managing project generated waste. In addition, water source emissions associated with the proposed project are generated by water supply and conveyance, water treatment, water distribution, and wastewater treatment.

The proposed project would develop the site with new residential, commercial, and open space uses. The proposed project is consistent with the intent of the SMU General Plan land use designation and would provide a mixed-use, walkable, sustainable neighborhood with residential and commercial uses. The proposed project would also include the extension of over 1,400 lineal feet of a multi-use trail, 72 bicycle parking spaces, and would be located approximately 0.3 miles from the South Hayward BART Station. Therefore, the proposed project would support the ability to use alternative modes of transportation, would promote initiatives to reduce vehicle trips and vehicle miles traveled, and would increase the use of alternate means of transportation, which would help reduce GHG emissions.

Following guidance from the BAAQMD, GHG emissions were estimated for the proposed project using CalEEMod. Table 6.H shows the calculated GHG emissions for the proposed project as compared to the GHG emissions identified in the General Plan EIR and the SH BART/Mission Blvd EIR. Motor vehicle emissions are the largest source of GHG emissions for the project at approximately 64 percent of the total. Energy use is the next largest category at 30 percent of CO_2e emissions. Solid waste and water use are about three percent and two percent of the total emissions, respectively. In addition, area sources are approximately one percent of the total emissions. CalEEMod output sheets are included in Appendix A.

According to the BAAQMD, a project would result in a less than significant GHG impact if it would:

- Result in operational-related greenhouse gas emissions of less than 1,100 metric tons of CO_2e a year; or

- Result in operational-related greenhouse gas emissions of less than 4.6 metric tons of CO_2e per service population (residents plus employees).

Table 6.H: Operational Greenhouse Gas Emissions

Emissions Source Category	Operational Emissions (Metric Tons per Year)						
	Proposed Project					2020 General Plan EIR	2012 SH BART/ Mission Blvd SEIR
	CO_2	CH_4	N_2O	CO_2e	Percent of Total Project Emissions	CO_2e	CO_2e
Area	9.9	<0.1	<0.1	10.0	1	169,696	5.77
Energy	495.1	<0.1	<0.1	498.4	30	254,969	4,276.08
Mobile	1,047.0	<0.1	0.0	1,048.0	64	748,550	12,156.34
Waste	20.4	1.2	0.0	50.6	3	26,235	1,538.77
Water	20.5	0.4	<0.1	34.1	2	8,794	123.77
Total Operational Emissions				**1,641.0**	**100**	**1,208,245**	**18,100.73**
BAAQMD Threshold				**1,100**	**-**	**-**	**-**
Exceed?				**Yes**	**-**	**-**	**-**
Total Service Population Emissions				**2.7[1]**	**-**	**4.0**	**6.38**
BAAQMD Threshold				**4.6**	**-**	**6.6**	**6.6**
Exceed?				**No**	**-**	**No**	**No**

Source: LSA (July 2019).
[1] Assuming a service population of 614 (586 residents and 28 employees).

Based on the analysis results, the proposed project would generate approximately 1,641.0 MT CO_2e which would exceed the BAAQMD numeric threshold of 1,100 MT CO_2e. The proposed project would develop 189 residential units which would provide residence for approximately 586 people. The proposed project would also result in an addition of approximately 28 new employees; therefore, the total service population (residents plus employees) would be 614 people. Therefore, the project's GHG emissions would result in a GHG efficiency of 2.7 MT CO_2e per service population which is below the BAAQMD's threshold of 4.6.

Because the project results in emissions below the 4.6 metric tons CO_2e per service population criterion, the project would not generate substantial GHG emissions and impacts related to operational GHG emissions would be less than significant. In addition, the proposed project would represent less than one and nine percent of total GHG emissions identified in the General Plan EIR and SH BART/Mission Blvd SEIR, respectively. The proposed project would not result in new or more significant impacts related to GHG emissions than identified in the Previous CEQA Documents.

6.8.2.2 Consistency with Greenhouse Gas Reduction Plans *(Criterion b)*

The City of Hayward adopted the 2009 CAP to reduce GHG emissions communitywide. The 2009 CAP was designed to reduce communitywide emissions 12.5 percent below 2005 levels by the year 2020,

and to set the City on a course to achieve a long-term emission reduction goal of 82.5 percent below 2005 levels by the year 2050.

As indicated above, the proposed project would support the ability to use alternative modes of transportation, would promote initiatives to reduce vehicle trips and vehicle miles traveled, and would increase the use of alternate means of transportation, which would help reduce GHG emissions. Therefore, the proposed project would implement appropriate GHG reduction strategies as discussed in the General Plan EIR and the SH BART/Mission Blvd SEIR and would not conflict with applicable plan, policy, or regulations pertaining to GHGs and this impact would be less than significant. Therefore, the proposed project would not result in new significant impacts beyond those identified in the Previous CEQA Documents.

6.8.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to greenhouse gas emissions than those identified in the Previous CEQA Documents.

6.9 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☐	☐	☒
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☐	☒	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☐	☒	☐
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☐	☒	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☐	☒	☐

6.9.1 Previous CEQA Documents Findings

The General Plan EIR identified less-than-significant impacts for hazards and hazardous materials and no mitigation measures were required. Specifically, General Plan Policies HAZ-6.2, HAZ-6.6, HQL-7.3, and HQL-7.5 ensure that potential impacts related to hazards are considered with new development and that people and the environment would be protected from exposure to hazardous materials.

The SH BART/Mission Blvd SEIR identified potentially significant impacts related to the potential release of hazardous materials during construction activities and development project operations and included mitigation measures to reduce these impacts to a less-than-significant level. Specifically, where there is potential for asbestos to occur, Mitigation Measure HAZ-2 requires an investigation by a qualified professional to determine the presence or absence of asbestos, and the preparation of a remediation plan, if necessary, prior to the commencement of any grading activities. Additionally, where there is potential soil and groundwater contamination, Mitigation Measure HAZ-3 requires the preparation of a Phase II ESA, as well as the implementation of any recommendations included in the Phase II ESA, prior to the issuance of any grading or construction permits.

6.9.2 Project Analysis

6.9.2.1 Routine Transport, Use, Storage, or Disposal of Hazardous Materials near Sensitive Receptors *(Criterion a)*

Operation of the project would result in less-than-significant impacts related to the routine transport, use, storage or disposal of hazardous materials, as the proposed residential land uses would involve only small quantities of commercially available hazardous materials for routine maintenance (e.g., paint and cleaning supplies).

Construction of the proposed project would involve the use and transport of hazardous materials. These materials could include fuels, oils, paints, and other chemicals used during construction activities. Handling and transportation of hazardous materials could result in accidental releases or spills and associated health risks to workers, the public, and environment. The routine handling and use of hazardous materials by construction workers would be performed in accordance with all applicable State and federal laws, such as the Hazardous Materials Transportation Act, the Resource Conservation and Recovery Act, the California Hazardous Materials Management Act, California Health and Safety Code, and California Code of Regulations Title 8 and Title 22. Therefore, compliance with existing regulations would ensure this impact would be less than significant.

6.9.2.2 Reasonably Foreseeable Upset and Accident Conditions *(Criterion b)*

There are two main ways that the public and/or the environment could be affected by the release of hazardous materials from the project site into the environment, including: 1) exposing workers and/or the public to potentially contaminated soil and groundwater during construction and/or operation of the project; or 2) exposing workers and/or the public to hazardous building materials (e.g., lead paint, asbestos) during demolition of existing structures.

As discussed in Section 6.9.2.1 above, compliance with existing regulations would reduce the potential impact for releases of hazardous materials that would be routinely transported, used, and/or disposed of during construction and/or operation of the proposed project to a less-than-significant level.

Potential hazardous conditions on the project site parcels are discussed below.

Parcel 1. During the 1950s, the southern edge of the project site was developed with a gasoline service station, which included two 8,000-gallon underground storage tanks (USTs), dispenser islands, and a service building. In the late 1950s the service station was relocated to the southeast edge of the project site for use as an automobile repair shop. In 1984 the two 8,000-gallon USTs were removed. Between 2012 and 2017 investigations were conducted near the gasoline station operations to characterize releases to soil, soil gas, and groundwater. In addition, soil excavation was conducted near the dispenser islands and concentrations of volatile organic compounds (VOCs) including benzene and ethyl benzene were detected above the California State Water Resources Control Board's (State Water Board) Low-Threat UST Closure Policy (LTCP).[26] A Site Investigation Work Plan[27] (Work Plan) was prepared in December 2017 to support closure with respect to the State Water Board's LTCP criteria. Between February and November 2018, the Work Plan was implemented, which included: soil gas delineation; advancement of test pits; supplemental soil removal; and post-excavation soil, soil gas and groundwater sampling. Approximately 2,000 cubic yards of soil were excavated from the site and transported off-site to the Dumbarton Quarry in Fremont as beneficial reuse for quarry reclamation. The excavation limits expanded beyond the previous excavation areas to include the former UST pit and the former fuel island.[28]

Laboratory analysis of post-excavation soil samples indicated that residual petroleum hydrocarbons are consistent with the State Water Board LTCP criteria. Following concurrence from the Regional Water Board, the excavation was backfilled. Post-excavation soil gas samples collected from the excavation backfill indicated that benzene is not present above its State Water Board LTCP petroleum vapor intrusion to indoor air residential criterion. Post-excavation groundwater monitoring indicated that the lateral extent of benzene in groundwater is defined at less than 250-feet from the site, separate-phase petroleum hydrocarbons are not present, and no drinking water supply wells are located within 1,000-feet of the defined benzene extent.[29]

In February 2019 the Regional Water Board issued a Notice of Intent to Issue a No Further Action Letter for the project site. Prior to issuance of a case closure letter, the Regional Water Board required the project applicant to provide documentation that all groundwater monitoring wells on the project site were destroyed. The project applicant submitted a Monitoring Well and Vapor Point Destruction Report on July 23, 2019, and subsequently requested that the No Further Action letter

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26 WEST Environmental Services & Technology, 2017. *Phase I Environmental Site Assessment, 29212-29236 Mission Boulevard, Hayward, California.* November.

27 WEST Environmental Services & Technology, 2017. *Site Investigation Work Plan, 29234 Mission Boulevard, Hayward, California, Regional Water Board Case No.: 01-1157.* December.

28 WEST Environmental Services & Technology, 2019. *No Further Action Request, 29234 Mission Boulevard, Hayward, California, Regional Water Board Case No.: 01-1157.* January.

29 Ibid.

be issued for the project site.[30] On August 15, 2019, the Regional Water Board issued the Uniform Closure Letter and Case Closure Summary[31] for the site and recommended proper management of onsite excavation activities to avoid threats to human health and the environment. Because the Regional Water Board has issued a No Further Action determination for the project site, impacts related to the potential release of hazardous materials would be less than significant.

Parcel 2. Parcel 2 consisted of undeveloped grasslands from approximately 1930s to the present. An initial site assessment identified potential hazardous materials on the site, including naturally occurring asbestos and petroleum products.[32] Consistent with General Plan Policy HAZ-6.2, which requires site investigation to determine the presence of hazardous materials, SCA HAZ-1 and SCA HAZ-2 are incorporated into the proposed project and potential impacts related to hazardous materials within Parcel 2 would be less than significant.

> **SCA HAZ-1**: Consistent with General Plan Policy HAZ-6.2, prior to approval of building or demolition permits, a Phase I environmental site analysis shall be conducted for the Parcel 2 property and, if warranted by such analysis as determined by the Hazardous Materials Office of the Hayward Fire Department or other regulatory agency, a Phase II environmental site analysis shall also be conducted. Recommendations included in the Phase II analysis for remediation of hazardous conditions shall be followed, including contact with appropriate regulatory agencies to obtain necessary permits and clearances. No construction (including grading) shall be allowed until written clearances are obtained from appropriate regulatory agencies.
>
> **SCA HAZ-2:** Consistent with General Plan Policy HAZ-6.2, and to ensure the protection of construction workers from exposure to potential hazardous materials releases in soils and groundwater during excavation of both parcels, a Construction Risk Management Plan (CRMP) shall be prepared by a qualified environmental professional for all phases of construction, implementation of which would protect construction workers, the public, and the environment from hazardous materials, including potential unknown contamination in the subsurface of the site. The CRMP shall be submitted to the Planning Division for review and approval prior to the start of site grading and construction activities, and shall include the following: 1) procedures for evaluating, handling, storing, testing and disposing of soil and groundwater generated during project excavation, grading, and dewatering activities and 2) a contingency plan that shall be implemented if previously unidentified potentially contaminated material or regulated features (e.g., USTs, asbestos containing material) are encountered during construction activities.
>
> If such material is identified that meets actionable levels from applicable regulatory agencies, remediation plans shall be prepared and implemented to remediate any hazards to acceptable levels and shall identify methods for removal and disposal of hazardous materials. Worker safety

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30 WEST Environmental Services & Technology, 2019. *Monitoring Well and Vapor Point Destruction Report, Former Pestana Property, 29234 Mission Boulevard, Hayward, California (RWQCB Case No.: 01-1157)*. July 23.

31 San Francisco Bay Regional Water Quality Control Board, 2019. Transmittal Letter – Pestana Property, 29234 Mission Boulevard, Hayward, Alameda County, File No. 01-1157. August 15.

32 WEST Environmental Services & Technology, 2018 *Summary of Recognized Environmental Conditions, City of Hayward Property-Mission Boulevard.*

plans shall also be prepared and implemented. All required approvals and clearances shall be obtained from appropriate regulatory agencies, including but not limited to the Hayward Fire Department, California Department of Toxic and Substances Control and Bay Area Air Quality Management District.

6.9.2.3 Hazardous Emissions within One-Quarter Mile of an Existing or Proposed School *(Criterion c)*

There are no existing or proposed schools located within one-quarter mile of the project site. Additionally, as described above, the proposed project would not involve the handling of acutely hazardous materials, or result in the release of hazardous materials. Therefore, this impact would be less than significant.

6.9.2.4 Cortese List *(Criterion d)*

The provisions of Government Code Section 65962.5 require the DTSC, the State Water Resources Control Board, the California Department of Health Services, and the California Department of Resources Recycling and Recovery (formerly the California Integrated Waste Management Board) to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal, leaking underground tank sites, and/or hazardous materials releases to the Secretary of Cal/EPA. Parcel 1 is listed on the Regional Water Board's GeoTracker database due to the presence of a leaking UST. However, as described above, the project site received case closure,[33] and therefore this impact would be less than significant.

6.9.2.5 Airport Safety Hazards *(Criterion e)*

As noted in the SH BART/Mission Blvd SEIR, the project site is not located within two miles of the Hayward Executive Airport, and no impacts were identified. Therefore, because the proposed project would be consistent with the type and intensity of development assumed for the project site, there would be no impact.

6.9.2.6 Emergency Response Plan (Criterion f)

The proposed project consists of a mixed-use development near the intersection of Tennyson Road and Mission Boulevard, both of which are main arterial roadways within the City. The proposed project would include access driveways on both roadways but would not create any obstructions or otherwise adversely traffic flows such that emergency access or emergency evacuation would be impaired. Development of the proposed project would not impair or interfere with the implementation of an emergency response or emergency evacuation plan and this impact would be less than significant.

6.9.2.7 Wildland Fires *(Criterion g)*

The project site is located within the Wildland Urban Interface, as mapped by the City.[34] However, as required by General Plan Policies HAZ-5.1, HAZ-5.2, and HAZ-5.3 and noted in the SH BART/Mission Blvd SEIR, the proposed project would be required to comply with the City's Hillside Design and

[33] San Francisco Bay Regional Water Quality Control Board, 2019. Transmittal Letter – Pestana Property, 29234 Mission Boulevard, Hayward, Alameda County, File No. 01-1157. August 15.

[34] Hayward, City of, 2014. *Hayward 2040 General Plan Background Report.* January.

Urban/Wildland Interface Guidelines and Fire Prevention Codes and would be required to incorporate defensible space and fuel reduction strategies into the project design, which would ensure potential impacts associated with wildland fires are reduced to a less-than-significant level.

6.9.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to population and housing than those identified in the Previous CEQA Documents. No additional mitigation measures would be required for the proposed project. Implementation of SCA HAZ-1 and SCA HAZ-2 would further ensure that impacts related to hazards and hazardous materials would be less than significant.

6.10 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	☐	☒	☐
i. Result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☐	☒	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☐	☒	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☐	☒	☐
iv. Impede or redirect flood flows?	☐	☐	☐	☐	☒	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☐	☒	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☐	☒	☐

6.10.1 Previous CEQA Documents Findings

The General Plan EIR determined that there would be less-than-significant impacts related to hydrology or water quality, primarily given required adherence to existing regulatory requirements, many of which are incorporated in the City of Hayward's Municipal Code.[35] These include Chapter 9, Article 4, which implements building standards to comply with federal flood control regulations; Chapter 10, Article 8, which requires erosion or sediment plans for grading or clearing permits; and Chapter 11, Article 5, which protects water quality by eliminating non-stormwater discharges, controlling illicit discharges, improving construction site controls, and improving erosion control. No mitigation measures were warranted.

The SH BART/Mission Blvd SEIR determined that there would be less-than-significant impacts related to water quality, groundwater supplies, erosion or siltation, and flooding. Impacts related to storm drain capacity, impeding or redirecting flood flows, inundation from failure of a dam or levee, and inundation by seiche tsunami, or mudflow were all found to be less than significant with incorporation of mitigation.

6.10.2 Project Analysis

6.10.2.1 Water Quality *(Criterion a)*

Construction. The proposed project includes construction of 189 residential units, consisting of 2 mixed-use buildings (Buildings A and B) and 23 townhome buildings, and 10,821 square feet of commercial space on the 12.2-acre project site. Pollutants of concern during construction include, but are not limited to, sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own, or in combination with other pollutants, can have a detrimental effect on water quality. During construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion and sedimentation compared to existing conditions. In addition, chemicals, liquid products, petroleum products (e.g., paints, solvents, and fuels), and concrete-related waste may be spilled or leaked and have the potential to be transported via storm water runoff into receiving waters.

Construction of the proposed project would disturb greater than one acre of soil thus, the proposed project would be subject to the requirements of the State Water Resources Control Board's (State Water Board) National Pollutant Discharge Elimination System (NPDES) permit Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (Construction General Permit).[36] Therefore, the project would be required to obtain coverage under the Construction General Permit, which requires preparation of a Stormwater Pollution Prevention Plan (SWPPP) and implementation of construction Best Management Practices (BMPs) during construction activities. In addition, Section 11-5.40 of the Hayward Municipal Code requires construction contractors to adhere to the City' s Site Design Standards and Guidance as it related to construction Best Management Practices (BMPs). Construction BMPs would include, but not be limited to:

[35] Hayward, City of, 2019. Municipal Code. June 29.

[36] California, State of, 2012. State Water Resources Control Board. Order No. 2009-0009-DWQ, as amended by Orders No. 2010-0014-DWQ and 2012-0006-DWQ. July 17.

- Erosion Control and Sediment Control BMPs designed to minimize erosion and retain sediment on site; and

- Good Housekeeping BMPs to prevent spills, leaks, and discharge of construction debris and waste into receiving waters.

Compliance with the requirements of the Construction General Permit and incorporation of construction BMPs to target pollutants of concern would ensure construction impacts related to waste discharge requirements, water quality standards, surface water quality, and erosion would be less than significant.

Operation. The project site is currently undeveloped, with a small paved access road in the northwest area of the site that totals approximately 0.28 acres of impervious surface area; therefore, construction of a new use could result in pollutants of concern in urban stormwater runoff from the project site. Pollutants of concern in urban stormwater runoff include sediment, nutrients, bacteria/viruses/pathogens, pesticides, metals, oil and grease, and trash and debris. The project would increase impervious surface area on the project site by 6.49 acres[37] which would increase stormwater runoff from the project site and more effectively transport pollutants into the storm drain system and receiving waters.

The project would comply with the requirements of Section 11.5-38 of the Hayward Municipal Code and the California Regional Water Quality Control Board San Francisco Region Municipal Regional Stormwater NPDES Permit (San Francisco MS4 Permit).[38] The Hayward Municipal Code and the San Francisco MS4 Permits require that Regulated Projects implement Low Impact Development, source control, site design, and stormwater treatment BMPs. Regulated Projects are defined as development projects that create and/or replace 5,000 square feet or more of impervious surface (collectively) over the entire project site. BMPs shall be incorporated into Regulated Project design to capture, treat, and reduce pollutants of concern in stormwater runoff. The proposed BMPs would reduce stormwater runoff from the project site to reduce impacts related to off-site erosion. Additionally, in the proposed condition, the project area would consist of impervious areas which are not subject to erosion and pervious areas which would be landscaped to reduce erosion. Required compliance with the Hayward Municipal Code and San Francisco MS4 Permit requirements, including incorporation of post-construction BMPs to target pollutants of concern, would reduce operation impacts related to waste discharge requirements, water quality standards, degradation of water quality, and erosion to a less-than-significant level.

Infiltration of stormwater has the potential to affect groundwater quality in areas of shallow groundwater. According to the geotechnical feasibility studies prepared for the proposed

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37 Carlson, Barbee & Gibson, Inc., 2019. *Drainage Report, 29212 Mission Boulevard, City of Hayward, California*. July 3.

38 California, State of, 2015. Regional Water Quality Control Board, San Francisco Bay Region. *Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049, NPDES Permit No. CAS612008.* November 19.

project,[39,40] groundwater in the vicinity of the project site occurs at depths in the range of 22 feet below ground surface. Pollutants in stormwater are generally removed by soil through absorption as water infiltrates. In areas of deeper groundwater, there is more absorption potential and, as a result, less potential for pollutants to reach groundwater. It is not expected that any stormwater that may infiltrate would affect groundwater quality due to the depth of groundwater. Therefore, the project would not substantially degrade groundwater quality.

6.10.2.2 Groundwater Supplies and Recharge *(Criterion b)*

The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Based on the depth to groundwater (22 feet below ground surface) it is not anticipated that groundwater dewatering would be required during construction. Further, operation of the project would not involve groundwater extraction because water supplies for the project would not be obtained from groundwater sources. The groundwater basin underlying the project site (the Santa Clara Valley Groundwater Basin) is not utilized as a water supply and no pumping activities currently occur within the City of Hayward. The City obtains water from the Hetch Hetchy Regional Water System, which is managed by the San Francisco Public Utilities Commission and supplied by snow melt from Yosemite. Thus, there would be no impacts related to decrease in groundwater supplies or interference with groundwater recharge.

6.10.2.3 Surface Runoff, Flooding, Storm Drain Capacity, and Polluted Runoff *(Criterion c)*

As discussed previously, construction and post-construction BMPs would be implemented to reduce pollutants in stormwater runoff. With implementation of BMPs, impacts related to the introduction of additional sources of polluted runoff would be less than significant. However, the project would increase impervious surface area on the project site by 6.49 acres which would increase both the rate and the amount of stormwater runoff generated from the project site area. The proposed BMPs would most likely reduce the rate and amount of stormwater runoff through measures such as detention, retention, or infiltration. However, the ability of downstream drainage facilities to safely accommodate increased flows, especially during intense storm events when the rate of stormwater flows would be the greatest, could be exceeded resulting in a potentially significant impact. If storm drain capacity is exceeded, on-site or off-site flooding could occur.

Pursuant to General Plan Policy PFS-5.3, a drainage plan is required to be prepared to evaluate the capacity of the downstream storm drain system and specify the drainage improvements required to accommodate increased flows. A Drainage Plan,[41] which includes a stormwater management plan, was prepared for the proposed project. The report includes a summary of existing (pre-project)

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39 Earth Systems Pacific, 2017. *Geologic Hazards Evaluation and Geotechnical Feasibility Study for the Proposed Multifamily Residential Development at 29212 Mission Boulevard, Hayward, California.* September 26.

40 Earth Systems Pacific, 2018. *Geologic Hazards Evaluation and Geotechnical Feasibility Study, Proposed Multifamily Residential Development, NW of 29212 Mission Boulevard, Hayward, California.* September 27.

41 Carlson, Barbee & Gibson, Inc., 2019. *Drainage Report, 29212 Mission Boulevard, City of Hayward, California.* July 3.

drainage flows from the project site, anticipated increases in the amount and rate of stormwater flows from the site and an analysis of the ability of downstream facilities to accommodate peak flow increases. The analysis also includes a summary of new and improved drainage facilities needed to accommodate stormwater increases. Specifically, the stormwater plan and hydrology maps delineate four drainage management areas that would be treated by two bioretention areas and two self-treating areas, demonstrating compliance with hydromodification requirements per provision C.3 of the Municipal Regional Stormwater Permit. In addition, a detention facility and integrated control structure would mitigate peak flows from the new development. The final design level drainage plan will be reviewed and approved by the Hayward Public Works Department staff and Alameda County Flood Control and Water Conservation District staff prior to approval of a grading or building permit.

6.10.2.4 Flood Flows and Pollutants Release Due to Inundation *(Criterion d)*

According to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM)[42] and the General Plan EIR, the project site is located within an area of minimal flood hazard. Because the project site is not within a 100-year floodplain or special flood hazard area, the project would not impede or redirect flood flows or risk release of pollutants from flooding during a storm event. Additionally, the project is site is not located near the Pacific Ocean or any large bodies of water and is not at risk of inundation from tsunami or seiche, nor is there risk that pollutants would be released due to inundation from tsunami or seiche. No impact would occur related to impeding or redirecting flood flows and release of pollutants from inundation.

6.10.2.5 Water Quality Control Plan and Sustainable Groundwater Management Plan *(Criterion e)*

The project is within the jurisdiction of the Regional Water Board. The Regional Water Board adopted a Water Quality Control Plan (Basin Plan) in May 2017,[43] which designates beneficial uses for all surface and groundwater within its jurisdiction and establishes the water quality objectives and standards necessary to protect those beneficial uses. As previously discussed, the project would comply with the applicable NPDES permits and Hayward Municipal Code requirements and would be required to implement construction and post-construction BMPs to reduce pollutants of concern in stormwater runoff. Implementation of construction and post-construction BMPs would reduce pollutants of concern in stormwater runoff so that the project would not degrade water quality, cause the receiving waters to exceed the water quality objectives, or impair the beneficial use of receiving waters. As such, the project would not conflict with the Regional Water Board's Basin Plan and impacts would be less than significant.

The Sustainable Groundwater Management Act (SGMA) was enacted in September 2014.[44] SGMA requires governments and water agencies of high- and medium-priority basins to halt overdraft of groundwater basins. SGMA requires the formation of local groundwater sustainability agencies

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42 Federal Emergency Management Agency, 2009. Flood Rate Insurance Map No. 06001C0293G. August 3.

43 California Regional Water Quality Control Board, San Francisco Bay Region, 2017. *San Francisco Bay Basin (Region 2) Water Quality Control Plan*. May 4.

44 California Department of Water Resources. 2019. SGMA Groundwater Management. Website: water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management (accessed July 19, 2019).

(GSAs), which are required to adopt Groundwater Sustainability Plans to manage the sustainability of the groundwater basins. The project site is located within the Santa Clara Valley Groundwater Basin, East Bay Plain Subbasin.[45,46] The City of Hayward is the exclusive GSA for the portion of the subbasin within their jurisdiction (the East Bay Municipal Utilities District is the other GSA for the subbasin).[47] The East Bay Plain Subbasin is identified by the California Department of Water Resources as a medium priority basin; therefore, development of a Groundwater Sustainability Plan is required by February 1, 2020.[48] However, a Groundwater Sustainability Plan has not yet been adopted for the East Bay Plain Subbasin. Regardless, as discussed previously, the proposed project would not affect groundwater supplies or recharge. Because there is not an adopted Groundwater Sustainability Plan applicable to the groundwater basin within the project area and the proposed project would not affect groundwater supplies or recharge, the project would not conflict with or obstruct the implementation of a sustainable groundwater management plan and no impact would occur.

6.10.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, implementation of the proposed project would not result in any new or more severe significant impacts related to hydrology and water quality, groundwater, and flooding than those identified in the Previous CEQA Documents. Compliance with existing NPDES regulations and Hayward Municipal Code requirements would ensure that potential impacts to hydrology and water quality would be less than significant.

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45 Hayward, City of, 2019. Sustainable Groundwater Management. Website: www.hayward-ca.gov/content/sustainable-groundwater-management (accessed July 19, 2019).

46 East Bay Municipal Utility District and City of Hayward, 2018. East Bay Plain Subbasin Sustainable Groundwater Management. February.

47 California Department of Water Resources, 2019. SGMA Groundwater Management (SGMA) Portal. Website: sgma.water.ca.gov/portal/gsa/print/200 (accessed July 19, 2019).

48 California Department of Water Resources, 2019. SGMA Basin Prioritization Dashboard. Website: gis.water.ca.gov/app/bp-dashboard/p2 (accessed July 19, 2019).

6.11 LAND USE AND PLANNING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Physically divide an established community?	☐	☐	☐	☐	☒	☐
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☐	☒	☐

6.11.1 Previous CEQA Documents Findings

The General Plan EIR identified several goals and policies related to land use and planning that would support new mixed-use development on infill sites (Policy LU-1.3 and Policy LU-3.5); encourage use of existing properties to enhance the established land use pattern (Policy LU-1.4); ensure that design of new development is compatible with established land use pattern (LU-1.7); and ensure that new development is located within proximity to BART and other transit services (LU-2.8 and LU-2.9). The Previous CEQA Documents found less-than-significant impacts related to land use and planning. No mitigation measures were required.

6.11.2 Project Analysis

6.11.2.1 Division of an Established Community *(Criterion a)*

The physical division of an established community typically refers to the construction of a physical feature (such as an interstate highway or railroad tracks) or removal of a means of access (such as a local road or bridge) that would impair mobility with an existing community, or between a community and outlying areas. Implementation of the proposed project would result in the construction of 189 new residential units in two mixed-use buildings and 23 residential buildings, and approximately 10,820 square feet of commercial development on the project site and would not result in the realignment of, closure of, or modification to, any roads of means of access.

6.11.2.2 Policy Conflicts *(Criterion b)*

As previously discussed, the project site is designated as SMU, ROC, and MDR in the City of Hayward General Plan. The SMU General Plan land use designation generally applies to areas near regional transit that are planned as walkable urban neighborhoods and are characterized by single-family homes, duplexes, triplexes, fourplexes, second units, townhomes, live-work units, multi-story apartment and condominium buildings, commercial buildings, and mixed-use buildings that contain commercial uses on the ground floor and residential units or office space on upper floors. This designation allows for a density of 4.3 to 100 dwelling units per acre.

The ROC designation generally applies to regional and commercial shopping centers and professional office developments and are characterized by commercial buildings, shopping centers, office buildings, and mixed-use developments.

The MDR designation generally applies to suburban and urban areas that contain a mix of housing types, with typical buildings including single-family homes, second units, duplexes, triplexes, fourplexes, townhomes, multi-story apartment and condominium buildings, and ancillary structures. The maximum allowable density for both the ROC and MDR designations is 17.4 units per acre.

The project site is within the S-T4, CN, and RM zoning districts; however, as noted in Section 4.0, Project Description, the proposed project would include a Zone Change to PD (Planned Development) District. The intent of the PD District is to encourage creative, efficient and attractive space utilization that maximizes development potential, emphasizes conservation, open space, and recreational amenities, and is harmonious with the natural characteristics of the land, including topography and other natural site features. PD districts are intended to carry out the policies and objectives of the General Plan, Design Review Guidelines, the Hillside Design Guidelines, and the Landscape Beautification Plan and to meet the standards necessary to satisfy the requirement for public health, safety, and general welfare.

The PD District designation provides flexibility in typical zoning standards such as lot area, frontage and width, coverage, required yards, building heights, landscaping, open space, and parking provided that the density does not exceed the applicable General Plan land use designation. Per the Hayward General Plan, residential density is calculated using the "net acreage" of the site which excludes land required for public and private streets, parks and other public facilities. The average net density across the site is 19.27 units per acre. As noted above, the SMU General Plan land use designation density range is 4.3 to 100 dwelling units per acre; the MDR General Plan land use designation density range is 8.7 to 17.4 dwelling units per acre; and the maximum density permitted in the ROC General Plan land use designation is 17.4 dwelling units per acre (no minimum).

According to the project plans, the average net density on Parcel 1 (designated SMU) is 24.42 units per acre; and the average density on Parcel 2 (designated MDR and ROC) is 16.43 units per acre; therefore, the average densities would not exceed the density allowed on each parcel. The Hayward General Plan contains Policy LU-3.5 to "Encourage infill residential developments that provide a mix of housing types and densities within a single development on multiple parcels. Individual parcels within the development may be developed at higher or lower densities than allowed by the General Plan provided that the net density of the entire site is within the allowable density range." Based on the density ranges for each site and policies that support flexibility for mixed use development, the proposed project would not result in any new or more significant impacts related to land use and planning than those identified in the Previous CEQA Documents.

6.11.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to land use and planning than those identified in the Previous CEQA Documents.

6.12 MINERAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☐	☒	☐
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☐	☒	☐

6.12.1 Previous CEQA Documents Findings

The General Plan EIR identified eleven past, present, or prospective mining sites within the City and the La Vista Quarry, which is no longer operating, is the only State-designated mineral resource sector of regional significance within the City. The Previous CEQA Documents found that there would be less-than-significant impacts related to mineral resources. No mitigation measures were necessary.

6.12.2 Project Analysis

The project site is located in an urbanized area without known mineral resources or resource recovery sites of value to the region and the residents of the State. The project site is not designated as a mineral resource zone, and no known or potential mineral resources are located on or near the project site.[49] Therefore, the proposed project would not result in the loss of availability of a known mineral resource of value to the region or residents of the State, and no impact would occur.

6.12.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, implementation of the proposed project would not substantially increase the severity of significant impacts identified in the Previous CEQA Documents, nor would it result in new significant impacts related to mineral resources that were not identified in the Previous CEQA Documents.

[49] Hayward, City of, 2014. *Draft Environmental Impact Report for the City of Hayward 2040 General Plan*. February.

6.13 NOISE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☐	☐	☒
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	☒	☐

6.13.1 Previous CEQA Document Findings

The General Plan EIR identified mitigation measures to address short-term construction noise levels and reduce these impacts to a less-than-significant level. Regarding long-term traffic noise levels, the General Plan EIR identified a significant and unavoidable impact, even after the incorporation of mitigation measures. The SH BART/Mission Blvd SEIR identified potentially significant impacts related to land use compatibility, vibration, and temporary and permanent ambient noise levels, but identified mitigation measures to ensure these impacts would be less than significant. The Previous CEQA Documents identified less-than-significant impacts related to airport noise.

6.13.2 Project Analysis

Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, or sleep. Several noise measurement scales exist that are used to describe noise in a particular location. A decibel (dB) is a unit of measurement that indicates the relative intensity of a sound. Sound levels in dB are calculated on a logarithmic basis. An increase of 10 dB represents a ten-fold increase in acoustic energy, while 20 dB is 100 times more intense and 30 dB is 1,000 times more intense. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness; and similarly, each 10 dB decrease in sound level is perceived as half as loud. Sound intensity is

normally measured through the A-weighted sound level (dBA). This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. The A-weighted sound level is the basis for 24-hour sound measurements which better represent how humans are more sensitive to sound at night.

As noise spreads from a source, it loses energy so that the farther away the noise receiver is from the noise source, the lower the perceived noise level would be. Geometric spreading causes the sound level to attenuate or be reduced, resulting in a six dB reduction in the noise level for each doubling of distance from a single point source of noise to the noise sensitive receptor of concern.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. Equivalent continuous sound level (L_{eq}) is the total sound energy of time varying noise over a sample period. However, the predominant rating scales for human communities in the State of California are the L_{eq}, the community noise equivalent level (CNEL), and the day-night average level (L_{dn}) based on A-weighted decibels (dBA). Ldn, sometimes denoted as DNL, represents the time varying noise over a 24-hour period, with a 10 dBA weighting factor applied to noise occurring from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). L_{dn} is similar to the CNEL scale, but without the adjustment for events occurring during the evening relaxation hours of 7:00 p.m. to 10:00 p.m.

The City's General Plan Hazards Element contains exterior noise compatibility guidelines for various land uses. The City's compatibility guidelines shown in Table 6.I identify noise levels up to 70 L_{dn} as "normally acceptable" for commercial and urban residential infill and mixed-use projects.

Table 6.I: Exterior Noise Compatibility Standards for Various Land Uses

Land Use Type	Highest Level of Exterior Noise Exposure That is Regarded as "Normally Acceptable"[1] (L_{dn} or CNEL)
Residential: Single-Family Homes, Duplex, Mobile Home	60
Residential: Townhomes and Multi-Family Apartments and Condominiums	65
Urban Residential Infill[2] and Mixed-Use Projects[3]	70
Lodging: Motels and Hotels	65
Schools, Libraries, Churches, Hospitals, Nursing Homes	70
Auditoriums, Concert Hall, Amphitheaters	Mitigation based on site-specific study
Sports Arena, Outdoor Spectator Sports	Mitigation based on site-specific study
Playgrounds, Neighborhood Parks	70
Golf Courses, Riding Stables, Water Recreation, Cemeteries	75
Office Buildings: Business, Commercial, and Professional	70
Industrial Manufacturing, Utilities, Agriculture	75

Source: City of Hayward. General Plan Hazards Element (2014).

[1] As defined in the State of California General Plan Guidelines 200, "Normally Acceptable" means that the specified land uses is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise mitigation. For projects located along major transportation corridors (major freeways, arterials, and rail lines) this "normally acceptable" exterior noise level may be exceeded for certain areas of the project site (e.g. the frontage adjacent to the corridor or parking areas) with the exception of primary open space areas (see policies HAZ-8.5 and HAZ-8.6).

[2] Urban residential infill would include all types of residential development within existing or planned urban areas (such as Downtown, The Cannery Neighborhood, and the South Hayward BART Urban Neighborhood) and along major corridors (such as Mission Boulevard).

[3] Mixed-Use Projects would include all mixed-use developments throughout the City of Hayward.

Section 4-1.03.1 of the Hayward Municipal Code limits noise levels generated on residential property, a noise level at any point outside of the property plane that exceeds 70 dBA between the hours of 7:00 a.m. and 9:00 p.m. (daytime) or 60 dBA between the hours of 9:00 p.m. and 7:00 a.m. (nighttime).

Section 4-1.03.4 of the Hayward Municipal Code limits construction hours to between the hours of 10:00 a.m. and 6:00 p.m. on Sundays and holidays and 7:00 a.m. and 7:00 p.m. on other days with construction noise limits from an individual device or piece of equipment to not exceed 83 dBA at a distance of 25 feet from the source. In addition, the construction noise level at any point outside of the property plane shall not exceed 86 dBA.

The ambient noise environment in the vicinity of the project site is affected by a variety of noise sources including traffic, construction, and commercial noise sources. Two (2) long-term (24-hour) noise measurements (LT 1 and LT-2) were conducted July 9, 2019 through July 10, 2019 and one (1) short-term noise measurement was recorded on July 10, 2019 on the project site to establish the existing ambient noise environment within and near to the project site. Noise measurement data collected during the noise measurements are summarized in Table 6.J. The noise measurements indicate that ambient noise in the project site vicinity ranges from approximately 60.7 dBA to 72.2 dBA L_{dn}. Noise from the traffic on Mission Boulevard, construction noise southwest of the intersection of Mission Boulevard and Valle Vista Avenue, and an automotive dealership. The location of all measurements is shown in Figure 6-1.

Motor vehicles with their distinctive noise characteristics are the dominant noise source in the project vicinity. The amount of noise varies according to many factors, such as volume of traffic, vehicle mix (percentage of cars and trucks), average traffic speed, and distance from the observer. Existing highway and roadway traffic noise levels in the project vicinity were assessed using the Federal Highway Administration (FHWA) highway traffic noise prediction model (FHWA RD-77-108). This model uses a typical vehicle mix for urban/suburban areas in California and requires parameters, including traffic volumes, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the day-night average level (L_{dn}) values. Existing traffic noise levels along modeled roadway segments nearest to the project are shown in Table 6.K below. Appendix C provides the specific assumptions used in developing these noise levels and model printouts.

As shown in Table 6.K, traffic noise level on Mission Boulevard adjacent to the project are moderately high with 70, 65, and 60 dBA L_{dn} noise contours extend to 64, 124, and 262 feet, respectively, from the roadway centerline. In addition, traffic noise levels on Tennyson Road adjacent to the project are low with 70, 65, and 60 dBA L_{dn} noise contours confined to the roadway right-of-way.

Table 6.J: Long-Term and Short-Term Ambient Noise Level Measurements

Monitor No.	Location	Start Date	Duration	Measured Short-Term Noise Level (dBA L_{eq})	Daytime Noise Levels[1] (dBA L_{eq})	Nighttime Noise Levels[2] (dBA L_{eq})	Average Daily Noise Level (dBA L_{dn})	Noise Source(s)
LT-1	East of the intersection of Mission Boulevard and Valle Vista Avenue.	7/9/19	24 hours	--	52.6 – 57.7	53.2 – 58.1	62.5	Traffic on Mission Boulevard. Construction on the southwest corner of the Mission Boulevard and Valle Vista Avenue intersection.
LT-2	At the western property line of Parcel A, north of Auto Force Regency automotive dealership.	7/9/19	24 hours	--	52.6 – 57.7	50.5 -55.4	60.7	Traffic on Mission Boulevard, activity at the car dealership, and construction on the southwest corner of the Mission Boulevard and Valle Vista Avenue intersection.
ST-1	28870 Mission Boulevard. In the driveway, approximately 85 feet from the centerline of Mission Boulevard.3	7/9/19	15 minutes	65.2	64.1 – 69.2	62.0 - 66.9	72.2	Traffic on Mission Boulevard and distant construction noise.

Source: Compiled by LSA. (2019).

[1] Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 7:00 p.m.

[2] Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.

[3] Hourly and Daily Noise levels at ST-1 were estimated using the noise profile of LT-1.

dBA = A-weighted decibels

L_{dn} = Community Noise Equivalent Level

L^{eq}=equivalent continuous sound level

Table 6.K: Existing Traffic Noise Levels

Roadway Segment	Average Daily Traffic Volume (ADT)	Centerline to 70 dBA L_{dn} (feet)	Centerline to 65 dBA L_{dn} (feet)	Centerline to 60 dBA L_{dn} (feet)	L_{dn} (dBA) 50 Feet From Centerline of Outermost Lane
Mission Boulevard between Tennyson Road and Harder Road	32,555	< 50	105	219	67.0
Mission Boulevard between Valle Vista Avenue/Project Driveway and Tennyson Road	30,990	64	124	262	68.2
Mission Boulevard between Industrial Parkway and Valle Vista Avenue/Project Driveway	31,820	63	126	266	68.5
Mission Boulevard between Whipple Road and Industrial Parkway	27,295	62	116	241	67.4
Tennyson Road West of Mission Boulevard	11,430	< 50	56	111	62.7
Tennyson Road East of Mission Boulevard	680	< 50	< 50	< 50	48.6
Tennyson Road East of Project Driveway	680	< 50	< 50	< 50	48.6
Valle Vista Avenue West of Mission Boulevard	1,600	< 50	< 50	< 50	52.4
Industrial Parkway West of Mission Boulevard	17,490	< 50	103	217	67.2
Industrial Parkway East of Mission Boulevard	6,100	< 50	< 50	< 50	58.0

Source: LSA (2019).
Note: Traffic noise levels within 50 feet of the roadway centerline are typically calculated manually, with site-specific information, such as topography, included.
ADT = average daily traffic
dBA = A-weighted decibels
L_{dn} = day-night average noise level

LSA

LEGEND

Receptor Location

1 Building Number

N

0 100 200

FEET

FIGURE 6-1

The True Life Companies - Caltrans Development Project

Receptor Locations

SOURCES: TRUE LIFE COMPANIES; R3 STUDIOS, APRIL 2019.

I:\HAY1701.06\G\Noise\Receptor_Locations.ai (9/3/19)

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6.13.2.1 Construction and Operational Noise *(Criterion a)*

Construction. Two types of short-term noise impacts would occur during construction of the project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally raise noise levels on access roads leading to the site. Although there would be high single-event noise exposure potential at a maximum level of 84 dBA L_{max} from trucks passing at 50 feet, the effect on longer-term (hourly or daily) ambient noise levels would be small. The grading phase would generate the highest daily construction vehicle trips based on the CalEEMod output sheets shown in Appendix A. There would be 1,270 daily project construction vehicle trips during the grading phase. Hourly project construction vehicle trips were estimated to 159 trips by dividing the total trips over an 8-hour time period. All construction vehicle trips would travel on Mission Boulevard to access the project site. Mission Boulevard have an estimated existing hourly/ADT volume of 3,182/31,820. Construction-related traffic would increase traffic noise levels by up to 0.2 dBA along Mission Boulevard Road. A noise level increase of less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, short-term, construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during site preparation, grading, building construction, architectural coating, and paving on the project site. Construction is undertaken in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases change the character of the noise generated on a project site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

Table 6.L lists the maximum noise levels recommended for noise impact assessments for typical construction equipment based on a distance of 50 feet between the equipment and a noise receptor. Typical operating cycles for such construction equipment may involve one to two minutes of full power operation followed by three to four minutes at lower power settings.

Typical noise levels range up to 88 dBA L_{max} at 50 feet during the noisiest construction phases. The site preparation/grading phase, which includes excavation and grading of the site, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, draglines, and front-end loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders.

Project construction is expected to require the use of graders, bulldozers, and water trucks/pickup trucks. Noise associated with the use of construction equipment is estimated to be between 55 and 85 dBA L_{max} at a distance of 50 feet from the active construction area for the site preparation phase. As shown in Table 6.L, the maximum noise level generated by each grader is assumed to be approximately 85 dBA L_{max} at 50 feet. Each dozer would generate approximately 85 dBA L_{max} at 50 feet. The maximum noise level generated by water trucks/pickup trucks is approximately 55 dBA L_{max} at 50 feet from these vehicles. Each doubling of the sound sources with equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates at some

distance from the other equipment, the worst-case combined noise level during this phase of construction would be 88 dBA L_{max} at a distance of 50 feet from the active construction area. Based on a usage factor of 40 percent, the worst-case combined noise level during this phase of construction would be 84 dBA L_{eq} at a distance of 50 feet from the active construction area.

Table 6.L: Typical Maximum Construction Equipment Noise Levels (L_{max})

Type of Equipment	Acoustical Usage Factor[1] (%)	Maximum Noise Level[2] (dBA L_{max} at 50 feet)
Backhoe	40	80
Compactor (ground)	20	80
Compressor	40	80
Crane	16	85
Dozer	40	85
Dump Truck	40	84
Excavator	40	85
Flat Bed Truck	40	84
Forklift	20	85
Front End Loader	40	80
Grader	40	85
Impact Pile Driver	20	95
Jackhammer	20	85
Pickup Truck	40	55
Pneumatic Tools	50	85
Pump	50	77
Rock Drill	20	85
Roller	20	85
Scraper	40	85
Tractor	40	84
Welder	40	73

Source: *FHWA Highway Construction Noise Handbook* (FHWA 2006).

[1] Usage factor is the percentage of time during a construction noise operation that a piece of construction equipment is operating at full power.

[2] Maximum noise levels were developed based on Spec. 721.560 from the CA/T program to be consistent with the City of Boston, Massachusetts, Noise Code for the "Big Dig" project.

CA/T = Central Artery/Tunnel
dBA = A-weighted decibel
FHWA = Federal Highway Administration
ft = feet
L_{max} = maximum noise level

The closest property lines of the residence and commercial use are located within 50 feet from the construction boundary are and would be exposed to construction noise levels higher than 88 dBA L_{max} (84 dBA L_{eq}). Noise levels generated by construction activity would exceed the City's allowable construction noise level of 83 dBA at a distance of 25 feet from the source and 86 dBA at any point outside of the property plane. Although the General Plan EIR identified construction noise within the City to be significant, construction noise would be avoided or reduced to less than significant with the implementation of the General Plan goals and policies, specifically:

- Policy HAZ-8.17 (Community Noise Control Ordinance): The City shall maintain, implement, and enforce a community noise control ordinance to regulate noise levels from public and private properties, vehicles, construction sites, and landscaping activities;

- HAZ-8.20 (Construction Noise Study): The City may require development projects subject to discretionary approval to assess potential construction noise impacts on nearby sensitive uses and to minimize impacts on those uses, to the extent feasible; and

- HAZ-8.21 (Construction and Maintenance Noise Limits): The City shall limit the hours of construction and maintenance activities to the less sensitive hours of the day (7:00 a.m. to 7:00 p.m. Monday through Saturday and 10:00 a.m. to 6:00 p.m. on Sundays and holidays).

Because the City has adopted General Plan polices to address noise generated by construction activities, noise generated by construction activities of the proposed project would be less than significant.

Operation. The proposed project would generate long-term noise impacts from both traffic and stationary noise sources, as discussed below.

Traffic Noise. Off-site traffic noise impacts would result a significant impact if traffic noise increased by 3 dBA or more over ambient noise levels without the project. The FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to evaluate highway traffic-related noise conditions along roadway segments in the vicinity of the project. This model requires various parameters (including traffic volumes, vehicle mix, vehicle speed, and roadway geometry) to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The resultant noise levels are weighted and summed over 24-hour periods to determine the CNEL values. The standard vehicle mix for California roadways was used for other roadway segments. The Existing, 2024, and 2035 without and with Project average daily traffic (ADT) volumes were obtained from the project's traffic study (LSA 2019). Tables 6.M, 6.N, and 6.O provide the traffic noise levels for the Existing, 2024, and 2035 without and with Project traffic noise levels, respectively. These noise levels represent a worst-case scenario that assumes no shielding is provided between the traffic and the location where the noise contours are drawn. Appendix C provides the specific assumptions used in developing these noise levels and model printouts.

Tables 6.M, 6.N, and 6.O show that the project-related traffic noise increase would be less than 3 dBA. Noise level increases less than 3 dBA would not be perceptible to the human ear in an outdoor environment. Therefore, long-term off-site traffic noise impacts would be less than significant.

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Table 6.M: Existing Without and With Project Traffic Noise Levels

Roadway Segment	Existing Without Project					Existing With Project					
	ADT	Centerline to 70 dBA L_{dn} (ft)	Centerline to 65 dBA L_{dn} (ft)	Centerline to 60 dBA L_{dn} (ft)	L_{dn} (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA L_{dn} (ft)	Centerline to 65 dBA L_{dn} (ft)	Centerline to 60 dBA L_{dn} (ft)	L_{dn} (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Mission Boulevard between Tennyson Road and Harder Road	32,555	< 50	105	219	67.0	33,035	< 50	106	221	67.1	0.1
Mission Boulevard between Valle Vista Avenue/Project Driveway and Tennyson Road	30,990	< 50	102	212	66.8	31,650	64	126	266	68.3	0.1
Mission Boulevard between Industrial Parkway and Valle Vista Avenue/Project Driveway	31,820	< 50	103	215	67.1	32,485	63	127	270	68.6	0.1
Mission Boulevard between Whipple Road and Industrial Parkway	27,295	< 50	96	196	66.0	27,615	62	117	243	67.5	0.1
Tennyson Road West of Mission Boulevard	11,430	< 50	56	111	62.7	11,950	< 50	58	114	62.9	0.2
Tennyson Road East of Mission Boulevard	680	< 50	< 50	< 50	48.6	1,135	< 50	< 50	< 50	50.9	2.3
Tennyson Road East of Project Driveway	680	< 50	< 50	< 50	48.6	680	< 50	< 50	< 50	48.6	0.0
Valle Vista Avenue West of Mission Boulevard	1,600	< 50	< 50	< 50	52.4	1,640	< 50	< 50	< 50	52.5	0.1
Industrial Parkway West of Mission Boulevard	17,490	< 50	71	146	64.5	17,890	< 50	105	221	67.3	0.1
Industrial Parkway East of Mission Boulevard	6,100	< 50	< 50	< 50	58.0	6,100	< 50	< 50	< 50	58.0	0.0

Source: LSA (2019).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
dBA = A-weighted decibels
ft = foot/feet
I-215 = Interstate 215
L_{dn} = day-night average noise level
NB = northbound
SB = southbound

Table 6.N: 2024 Without and With Project Traffic Noise Levels

Roadway Segment	Existing Without Project					Existing With Project					
	ADT	Centerline to 70 dBA L_{dn} (ft)	Centerline to 65 dBA L_{dn} (ft)	Centerline to 60 dBA L_{dn} (ft)	L_{dn} (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA L_{dn} (ft)	Centerline to 65 dBA L_{dn} (ft)	Centerline to 60 dBA L_{dn} (ft)	L_{dn} (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Mission Boulevard between Tennyson Road and Harder Road	39,389	61	118	248	67.8	39,871	61	119	250	67.9	0.1
Mission Boulevard between Valle Vista Avenue/Project Driveway and Tennyson Road	37,651	60	115	241	67.6	38,311	71	142	301	69.1	0.1
Mission Boulevard between Industrial Parkway and Valle Vista Avenue/Project Driveway	38,622	58	116	244	68.0	39,287	71	144	306	69.5	0.1
Mission Boulevard between Whipple Road and Industrial Parkway	35,082	< 50	111	230	67.1	35,402	70	136	286	68.5	0.0
Tennyson Road West of Mission Boulevard	13,858	< 50	63	125	63.5	14,378	< 50	64	128	63.7	0.2
Tennyson Road East of Mission Boulevard	839	< 50	< 50	< 50	49.6	1,294	< 50	< 50	< 50	51.4	1.8
Tennyson Road East of Project Driveway	839	< 50	< 50	< 50	49.6	839	< 50	< 50	< 50	49.6	0.0
Valle Vista Avenue West of Mission Boulevard	2,044	< 50	< 50	< 50	53.4	2,084	< 50	< 50	< 50	53.5	0.1
Industrial Parkway West of Mission Boulevard	21,306	< 50	80	166	65.4	21,706	60	119	250	68.1	0.0
Industrial Parkway East of Mission Boulevard	6,319	< 50	< 50	< 50	58.1	6,319	< 50	< 50	< 50	58.1	0.0

Source: LSA (2019).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
dBA = A-weighted decibels
ft = foot/feet
I-215 = Interstate 215
L_{dn} = day-night average noise level
NB = northbound
SB = southbound

Table 6.O: 2035 Traffic Noise Levels Without and With Project

Roadway Segment	Existing Without Project					Existing With Project					
	ADT	Centerline to 70 dBA L_{dn} (ft)	Centerline to 65 dBA L_{dn} (ft)	Centerline to 60 dBA L_{dn} (ft)	L_{dn} (dBA) 50 ft from Centerline of Outermost Lane	ADT	Centerline to 70 dBA L_{dn} (ft)	Centerline to 65 dBA L_{dn} (ft)	Centerline to 60 dBA L_{dn} (ft)	L_{dn} (dBA) 50 ft from Centerline of Outermost Lane	Increase from Baseline Conditions
Mission Boulevard between Tennyson Road and Harder Road	54,425	72	145	307	69.2	54,905	73	146	309	69.3	0.1
Mission Boulevard between Valle Vista Avenue/Project Driveway and Tennyson Road	52,305	71	141	299	69.1	52,965	71	142	301	69.1	0.0
Mission Boulevard between Industrial Parkway and Valle Vista Avenue/Project Driveway	53,585	70	143	303	69.4	54,250	71	144	306	69.5	0.1
Mission Boulevard between Whipple Road and Industrial Parkway	52,215	72	142	299	68.8	52,535	73	143	300	68.8	0.0
Tennyson Road West of Mission Boulevard	19,200	< 50	75	155	64.9	19,720	< 50	77	157	65.1	0.2
Tennyson Road East of Mission Boulevard	1,190	< 50	< 50	< 50	51.1	1,645	< 50	< 50	< 50	52.5	1.4
Tennyson Road East of Project Driveway	1,190	< 50	< 50	< 50	51.1	1,190	< 50	< 50	< 50	51.1	0.0
Valle Vista Avenue West of Mission Boulevard	3,020	< 50	< 50	< 50	55.1	3,060	< 50	< 50	< 50	55.2	0.1
Industrial Parkway West of Mission Boulevard	29,700	< 50	98	206	66.8	30,100	< 50	99	207	66.9	0.1
Industrial Parkway East of Mission Boulevard	6,800	< 50	< 50	< 50	58.4	6,800	< 50	< 50	< 50	58.4	0.0

Source: LSA (2019).
Note: Traffic noise within 50 ft of the roadway centerline should be evaluated with site-specific information.
ADT = average daily traffic
dBA = A-weighted decibels
ft = foot/feet
I-215 = Interstate 215
L_{dn} = day-night average noise level
NB = northbound
SB = southbound

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HVAC Noise. Buildings A and B would have rooftop heating, ventilation, and air conditioning (HVAC) units while the townhomes would have ground floor HVAC units. The HVAC equipment could operate 24 hours per day and would generate noise levels of 66.6 dBA L_{eq} at five feet, based on previous measurements by LSA. Table 6.P shows the noise levels generated by HVAC units at the closest residence and commercial use. As shown in Table 6.P, noise levels generated by rooftop HVAC equipment from Building A and ground floor HVAC equipment from the townhomes would not exceed the City's daytime and nighttime exterior noise standard of 70 dBA and 60 dBA, respectively. Therefore, noise level generated from on-site HVAC equipment would be less than significant.

Table 6.P: HVAC Noise

Land Use	Direction	HVAC	Total Noise Level[1] (dBA L_{eq})	Reference Distance (ft)	Distance (ft)	Distance Attenuation (dBA)	Shielding (dBA)	Noise Level (dBA L_{eq})
Residential	Northeast	4	72.6	5	70	22.9	0	49.7
Commercial	Northwest	57[2]	84.2	5	97[2]	25.8	5	53.4

Source: Compiled by LSA (2019)

[1] The total noise level based on the number of HVAC units and each HVAC unit generating a noise level of 66.6 dBA Leq at a distance of 5 ft.

[2] 12 HVAC units from two 6-plex townhomes and 45 HVAC units from Building A.

[3] The average distance from the two townhomes and Building A.

Land Use Compatibility. The land use compatibility of the project site was assessed based on the City's exterior noise compatibility guidelines shown in Table 6.I. As shown in Table 6.I, residences located in urban residential infill and mixed-use projects and commercial uses have a "normally acceptable" exterior noise level of 70 dBA L_{dn}. The maximum acceptable interior noise level for new residential units is 45 dBA L_{dn} with windows closed.

As noted in Table 6.I, exterior noise level may exceed the "normally acceptable" noise level for certain areas of the project site, such as the frontage adjacent to the corridor or parking areas, for projects located along major transportation corridors. For residential uses, the exterior noise level applies to the private rear yards of townhomes and common courtyards, roof gardens, or gathering spaces of multifamily residences or mixed-use. The standard does not apply to secondary open space areas, such as front yard, balconies, stoops, and porches. Buildings A and B on the project site is mixed-use and the project is considered urban residential infill because it is located along Mission Boulevard.

Exterior Noise. Table 6.Q shows the exterior traffic noise levels under the 2035 with project conditions at Buildings A and B, park, and townhomes on the project site. Figure 6-2 shows the receptors locations. As shown in Table 6.Q, all of the receptors representing the proposed on-site residential and commercial uses would have an exterior noise level of 70 dBA L_{dn} or less except for Receptors R-5 and R-6, which exterior noise levels would reach up to 72.1 dBA L_{dn}. However, no traffic noise impacts would occur at Receptors R-5 and R-6 because they are located along the frontages of Buildings A and B, adjacent to Mission Boulevard, and are

intended to house commercial uses. However, in the event that Building B is occupied by a daycare facility and the facility utilizes the outdoor area as a play area, the following condition of approval shall be required:

SCA NOI-1: Should Building B house a use such as a daycare and the outdoor area would be utilized as a playground, noise barriers would be required around the exterior of the playground area in order to reduce noise levels generated by traffic noise on Mission Boulevard by a minimum of 3 dBA to reduce levels to below 70 dBA L_{dn}. This design measure shall be evaluated by a qualified acoustical engineer and shall be reflected on the application for tenant improvements for the commercial space and installed prior to the issuance of a certificate of occupancy for a daycare and/or preschool use.

Table 6.Q: 2035 with Project Traffic Noise Level

Receptor No.	Use	Distance from Roadway Centerline (ft)		2035 with Project Traffic Noise Level[1] (dBA L_{dn})			
		Mission Boulevard	Tennyson Road	Mission Boulevard	Tennyson Road	Total Exterior Noise Level[2]	Interior Noise Level (with Windows and Doors Open/ Closed)[3]
R-1	Townhouse (Building 18)	410	370	59.5	40.6	59.5	47.5 / 32.5
R-2	Townhouse (Building 19)	345	510	60.6	38.6	60.6	48.6 / 33.6
R-3	Townhouse (Building 23)	285	645	61.9	37.0	61.9	49.9 / 34.9
R-4	Building A	160	785	65.7	35.7	65.7	53.7 / 38.7
R-5	Building A	60	940	72.1	34.6	72.1	60.1 / 45.1
R-6	Building B	60	1,145	72.1	33.3	72.1	60.1 / 45.1
R-7	Townhouse (Building 1)	265	1,055	62.3	33.8	62.3	50.3 / 38.1
R-8	Park	175	1,010	65.1	34.1	65.1	NA

Source: LSA (2019).

[1] The traffic noise level at each receptor was based on the 2035 with project traffic noise levels shown in Table 6.13.H and the receptor distance from roadway centerline.

[2] Traffic noise level from Mission Boulevard and Tennyson Road were combined to determine the total traffic noise level.

[3] The interior noise levels were calculated based on an exterior-to-interior noise level reduction of 12 dBA with windows and doors open (EPA 1978) and 27 dBA with windows and doors closed based on calculations provided in Appendix D.

NA = Not Applicable.

Interior Noise. Table 6.Q shows the interior traffic noise levels under the 2035 with project conditions at Buildings A and B, townhomes, and open space on the project site. Figure 6-2 shows the receptors locations.

Standard construction for residential buildings in California with a combination of exterior walls, doors, and windows would provide an exterior-to-interior noise level reduction of 12 dBA with windows and doors open based on the United States Environmental Protection Agency's (EPA) Protective Noise Levels (1978). As shown in Table 6.Q, interior noise levels would exceed the City's interior noise standard of 45 dBA Ldn with windows and doors open.

LSA

LEGEND

Project Site

Noise Monitoring Location

N

0 150 300

FEET

SOURCE: Google Earth, 2018

FIGURE 6-2

The True Life Companies - Caltrans Development Project

Noise Monitoring Locations

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In order to estimate the interior noise levels at the proposed receptors near Mission Boulevard with a windows-closed condition, further calculations were completed. Consistent with standard construction for residential buildings in California, the following wall assembly was used to calculate estimated interior noise levels: an exterior façade of 7/8-inch stucco over 0.5 inch OSB, 2-inch x 6-inch timber stud with fiberglass insulation, and 5/8-inch Type X gypsum board. Utilizing this wall construction and the window dimensions presented in the project plans at the proposed bedrooms assuming a standard window of STC-28, the composite façade would provide an exterior-to-interior noise reduction of approximately 26 dBA with windows and doors closed. The calculated exterior-to-interior noise level reduction for the assumed wall assembly is provided in Appendix D.

Based on these calculations, interior noise levels would not exceed the City's interior noise standard of 45 dBA Ldn with standard construction and windows and doors closed except for Receptors R-5 and R-6, which represents the frontage area of Buildings A and B along Mission Boulevard. These locations would require upgraded windows and sliding glass doors with a rating higher than STC-28.

This recommendation is considered preliminary and once final architectural plans are available with the exterior wall details and window types, an acoustical consultant shall prepare a final acoustical report to confirm that the proposed construction and window ratings would meet the City's interior noise standard of 45 dBA Ldn or lower. As required by Mitigation Measure Noise-2 from the SH BART/Mission Blvd SEIR, noise reduction measures from the site-specific noise study shall be incorporated into the project design to ensure consistency with local and state noise standards. Therefore, with implementation of SCA NOI-2, the proposed project would comply with the City's exterior and interior noise compatibility standards.

SCA NOI-2: In compliance with SH BART/Mission Blvd SEIR Mitigation Measure Noise-2, and in order to comply with the City's exterior and interior noise compatibility standards, the following measures shall be implemented:

- The proposed project shall include the installation of mechanical ventilation such as air condition for all dwelling units so that windows and doors can remain closed for a prolonged period of time.

- Standard building construction requirements consisting of windows and doors higher than STC-28 are incorporated for frontline dwelling units of Buildings A and B along Mission Boulevard.

- A final acoustical report shall be prepared once final architectural plans are available to confirm that the interior living spaces of residential dwelling units will meet the City's interior noise standard of 45 dBA L_{dn}.

6.13.2.2 Vibration *(Criterion b)*

Construction. This construction vibration impact analysis discusses the potential for building damage using vibration levels in PPV (in/sec). The FTA guidelines indicate that a vibration level up to

102 VdB (equivalent to 0.5 PPV [in/sec]) is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage (FTA 2018). For a non-engineered timber and masonry building, the construction vibration damage criterion is 94 VdB (0.2 PPV [in/sec]). For a fragile building, the construction vibration damage criterion is 90 VdB (0.12 PPV [in/sec]).

Table 6.R shows the PPV and VdB values at 25 feet from the construction vibration source. As shown in Table 6.R, bulldozers and other heavy-tracked construction equipment (except for pile drivers and vibratory rollers) generate approximately 87 VdB of ground-borne vibration when measured at 25 feet, based on the Transit Noise and Vibration Impact Assessment Manual (FTA 2018). Pile drivers and vibratory rollers would not be used during construction of the proposed project. Outdoor site preparation for the project is expected to use a large bulldozer or similar equipment and a loaded truck. The greatest vibration levels are anticipated to occur during the site preparation phase. All other phases are expected to result in lower vibration levels. The distance to the nearest buildings for vibration impact analysis is measured between the nearest off-site buildings and the project boundary (assuming the construction equipment would be used at or near the project boundary) because vibration impacts occur at the building.

The formula for vibration transmission is provided below:

$$L_v dB\ (D) = L_v dB\ (25\ ft) - 30\ Log\ (D/25)$$

$$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$$

Table 6.R: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L_V at 25 ft	
	PPV (in/sec)	L_V (VdB)[1]
Pile Driver (Impact), Typical	0.644	104
Pile Driver (Sonic), Typical	0.170	93
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large Bulldozer[2]	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks[2]	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Sources: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).
[1] RMS vibration velocity in decibels (VdB) is 1 µin/sec.
[2] Equipment shown in **bold** is expected to be used on site.

µin/sec = microinches per second
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
L_V = velocity in decibels
PPV = peak particle velocity
RMS = root-mean-square
VdB = vibration velocity decibels

Table 6.S lists the projected vibration levels generated by construction equipment operating on the project site that would affect the closest commercial and residential structures in the project vicinity. For typical construction activity, the equipment with the highest vibration generation potential is the large bulldozer, which would generate a vibration level of 87 VdB at 25 feet. As

shown in Table 6.S, the commercial structure to the northwest and residential structure to the northeast would experience vibration levels of 94 VdB (0.191 PPV [in/sec]) and 72 VdB (0.016 PPV [in/sec]), respectively. This vibration level would not result in building damage because vibration levels would not exceed the FTA vibration damage threshold of 94 VdB (0.2 PPV [in/sec]). Therefore, vibration levels generated by construction activity would be less than significant.

Table 6.S: Summary of Construction Equipment and Activity Vibration

Land Use	Direction	Equipment/Activity	Reference Vibration Level (VdB) at 25 ft	Reference Vibration Level (PPV) at 25 ft	Distance (ft)	Maximum Vibration Level (VdB)	Maximum Vibration Level (PPV)
Commercial	Northwest	Large Bulldozers	87	0.089	15	94	0.191
		Loaded Trucks	86	0.076	15	93	0.164
Residential	Northeast	Large Bulldozers	87	0.089	80	72	0.016
		Loaded Trucks	86	0.076	80	71	0.013

Source: LSA (2019).
Note: The FTA-recommended building damage threshold is 94 VdB (0.2 PPV [in/sec]) for non-engineered timber and masonry structures.
ft = foot/feet
FTA = Federal Transit Administration
in/sec = inches per second
PPV = peak particle velocity
VdB = vibration velocity decibels

Operation. The proposed project would not generate vibration. In addition, vibration levels generated from project-related traffic on the adjacent roadways would be unusual because the rubber tires and suspension systems of on-road vehicles provide vibration isolation. Therefore, vibration generated from project-related traffic on the adjacent roadways would be less than significant. No mitigation measures are required.

6.13.2.3 Airport Noise *(Criterion c)*

The project site is located approximately 3.5 mi northwest of the Hayward Executive Airport and 10 mi northwest of the Oakland International Airport. The proposed project site is not within the vicinity of a private airstrip or an airport land use plan, or within two miles of a public airport or public use airport. Therefore, no noise impacts from aircraft noise would occur.

6.13.3 Conclusion

The proposed project would not result in any new or more significant noise-related impacts than those identified in the Previous CEQA Documents considered in this analysis. In addition, the level of development currently proposed for the site is within the development assumptions included in the General Plan. As such, the operation-period noise impacts would be similar to those analyzed in the General Plan EIR. Implementation of SCA NOI-1 would further ensure that the proposed project would reduce any noise-related impacts associated with the proposed project on sensitive receptors, and therefore impacts would be less than significant.

6.14 POPULATION AND HOUSING

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☐	☒	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☐	☒	☐

6.14.1 Previous CEQA Documents Findings

The Previous CEQA Documents identified less-than-significant impacts related to population and housing. The General Plan EIR identified policies that would maintain growth within established urban boundaries on infill sites, limiting the potential for substantial unplanned population growth (Policy LU-1.2 and Policy LU-1.3). The SH BART/Mission Blvd SEIR identified mitigation measures to address unanticipated population growth and ensure final build-out projections are included in future regional projections, and no other mitigation measures were warranted.

6.14.2 Project Analysis

As noted in Section 6.11 above, the proposed project would be consistent with the density range and uses assumed for the project site within the City's General Plan. The proposed project would not require additional infrastructure that was not previously considered or analyzed. The project site is currently vacant and the proposed project would not displace existing housing or people thus it and would not require the construction of replacement housing elsewhere in the City. Therefore, the proposed project would not result in any new or more significant impacts related to population and housing than those identified in the Previous CEQA Documents.

6.14.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to population and housing than those identified in the Previous CEQA Documents. No additional mitigation measures would be required for the proposed project.

6.15 PUBLIC SERVICES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:						
i. Fire protection?	☐	☐	☐	☐	☒	☐
ii. Police protection?	☐	☐	☐	☐	☒	☐
iii. Schools?	☐	☐	☐	☐	☒	☐
iv. Parks?	☐	☐	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☐	☐	☒	☐

6.15.1 Previous CEQA Documents Findings

The General Plan EIR identified less-than-significant impacts on public services associated with implementation of the General Plan. Several goals and policies in the Land Use and Community Character Element, Hazards Element, Community Health and Quality of Life Element, Education and Lifelong Learning Element, and Community Safety Element address the provision of adequate public services and facilities to serve increased demand associated with new development. The SH BART/Mission Blvd SEIR identified mitigation measures to address the payment of impact fees by developers to address population growth, and no other mitigation measures were warranted.

6.15.2 Project Analysis

As noted in Section 6.11, the proposed project would be consistent with the density range and uses envisioned for the site in the General Plan. The General Plan EIR found that implementation of General Plan policies and development under General Plan assumptions would not result in adverse impacts or the need for new or physically altered government facilities in order to maintain

acceptable performance objectives for any public services. Individual services and facilities that would serve the proposed project are discussed below.

6.15.2.1 Fire Protection *(Criterion a.i)*

The City of responsible for coordinating service provisions to adjust the expected increase in demand for fire services; therefore, the City of Hayward Fire Department (Fire Department) would adjust service capacity as needed to serve new development, including the proposed project. New development, including the proposed project, is required to adhere to appropriate building and fire code requirements that would be incorporated into project construction, including consistency with the Urban Wildland Fire Interface Design Guidelines as discussed in Section 6.9 and 6.20. The proposed project would be subject to plan review by the Fire Department to ensure proper life safety standards and compliance with the California State Fire Code, and adequate emergency response especially for onsite access, exits, and any necessary special equipment to assist firefighters on-site. Thus the project would not require the construction of expansion of any fire service facilities to serve the proposed project.

6.15.2.2 Police Protection *(Criterion a.ii)*

The City of responsible for coordinating service provisions to adjust the expected increase in demand for police services; therefore, the City of Hayward Police Department would adjust service capacity as needed to serve new development, including the proposed project. Per General Plan Policy CS-19, the City includes Police Department staff in the review of new development projects to promote the implementation of Crime Prevention Through Environmental Design principles, reducing crime and the need for new or expanded police facilities. Thus, the project would not require the construction of expansion of any police service facilities to serve the proposed project.

6.15.2.3 Schools *(Criterion a.iii)*

As noted in the SH BART/Mission Blvd SEIR, schools near the project site are currently operating below maximum capacity. Development under the General Plan and SH BART/Mission Blvd FBC Project, including the proposed project, would be required to pay school impact fees to off-set the impacts of additional student generation, as identified by General Plan Policy EDL-3.11 (School Impact Fees). Thus, the project would not require the construction of expansion of any school facilities to serve the proposed project.

6.15.2.4 Parks *(Criterion a.iv)*

The proposed project would increase the use of existing neighborhood and regional parks. Compliance with Chapter 10, Article 16, Property Developers – Obligations for Parks and Recreation, of the Hayward Municipal Code would reduce impacts to parks to a less-than-significant level. In addition, the proposed project includes development of an approximately 17,000square-foot dog park, a 1,400-foot-long linear trail, an approximately 5,600-square-foot urban park and a series of common and private open spaces and public amenities on the project site. Thus, the project would not require the construction of expansion of any recreational facilities.

6.15.2.5 Other Public Facilities *(Criterion a.v)*

The General Plan EIR identifies goals and policies related to the provision of library services to serve existing and future development demand, with the goal of maintaining a minimum standard of 0.75 square feet of library space per 1,000 residents (General Plan Policy EDL-6.1). The proposed project would not substantially increase the demand for these or other services, such that the construction of expansion of additional public facilities would occur.

6.15.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to public services and parks and recreation services than those identified in the Previous CEQA Documents.

6.16 RECREATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☐	☒	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☐	☒	☐

6.16.1 Previous CEQA Documents Findings

The Previous CEQA Documents found that there would be less-than-significant impacts related to recreation. No mitigation measures were required.

6.16.2 Project Analysis

The City of Hayward's development standards require new residential development, including the proposed project, to provide useable open space for project residents. The proposed project would provide a total of 52,865 square feet of open space, consisting of approximately 41,500 square feet of common space and 11,271 square feet of private open space. In addition to common and private open space, the proposed project would also include a number of publicly accessible, privately maintained amenities throughout the site, including an approximately 17,000-square-foot public dog park, a 5,600-square-foot urban park, and an easement for the extension of a multi-use trail. The proposed project would increase the use of existing neighborhood and regional parks because it would increase the population in the City. However, because the proposed project would be consistent with the density range and uses envisioned for the site in the City's General Plan, this increase was accounted for and mitigated in the General Plan EIR through Policy HQL-10.12 (Park Dedication Requirements and In-Lieu Fees). Compliance with this policy and Chapter 10, Article 16, Property Developers – Obligations for Parks and Recreation, of the Hayward Municipal Code would reduce impacts to parks and recreational facilities to a less-than-significant level.

6.16.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, the proposed project would not result in any new or more severe significant impacts related to parks and recreation than those identified in the Previous CEQA Documents. No additional mitigation measures would be required for the proposed project.

6.17 TRANSPORTATION

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☐	☐	☒
b. Conflict or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?	☐	☐	☐	☒	☐	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐	☐	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐	☐	☐

6.17.1 Previous CEQA Documents Findings

The General Plan EIR identified potentially significant impacts related to intersection delays under the 2035 project condition and cumulative condition. The General Plan EIR identified a number of mitigation measures, mostly consisting of intersection modifications, to reduce some impacts to a less-than-significant level. However, there were no feasible mitigations for 15 intersections, including Mission Boulevard/Industrial Parkway, Ruus Road-Industrial Parkway SW/Industrial Parkway, I-880 Southbound Ramps/Industrial Parkway W which are analyzed for the proposed project, as described below, and therefore the General Plan EIR identified significant and unavoidable impacts.

The SH BART/Mission Blvd SEIR identified potentially significant impacts at the intersections of Dixon-East 12th Street/Tennyson Road, Dixon Street/Tennyson Road, Mission Boulevard/Industrial Parkway, and Mission Boulevard/Harder Road. The SH BART/Mission Blvd SEIR identified mitigation measures to reduce all of these impacts to a less-than-significant levels.

6.17.2 Project Analysis

The following section is based on the information provided in the Traffic Impact Analysis (TIA) prepared for the proposed project by LSA, included in Appendix E.[50] The TIA evaluates the transportation impacts that could result from the proposed project, including impacts associated with traffic congestion, transit services, and pedestrian and bicycle circulation.

[50] LSA Associates, Inc., 2019. *Traffic Impact Analysis, 29212 Mission Boulevard, Hayward, California.* September.

6.17.2.1 Conflict with a Program, Plan, Ordinance, or Policy (*Criterion a)*

The TIA for the proposed project was conducted in accordance with the City's Interim Traffic Study Guidelines. The TIA includes an analysis of AM and PM peak hour traffic conditions for 12 signalized intersections within the vicinity of the project site. The TIA also includes an analysis of site access and on-site circulation, as well as potential impacts to transit, bicycle, and pedestrian facilities, and parking. Based on consultation with the City, the following intersections were analyzed for the proposed project:

1. Mission Boulevard (State Route 238 [SR-238])/Harder Road (signalized)
2. Mission Boulevard (SR-238)/Tennyson Road (signalized)
3. Mission Boulevard (SR-238)/Valle Vista Avenue-Project Driveway (signalized)
4. Mission Boulevard (SR-238)/Industrial Parkway W (signalized)
5. Mission Boulevard (SR-238)/Whipple Road (signalized)
6. Dixon Street/Valle Vista Avenue (all-way stop control)
7. Huntwood Avenue/Tennyson Road (signalized)
8. Huntwood Avenue/Industrial Parkway W (signalized)
9. Ruus Road-Industrial Parkway SW/Industrial Parkway W (signalized)[51]
10. I-880 Southbound Ramps/Industrial Parkway W (signalized)
11. I-880 Northbound Ramps-Industrial Parkway SW/Whipple Road (signalized)
12. Project Driveway/Tennyson Road (one-way stop control)

Traffic conditions at the study intersections were analyzed for both the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour typically occurs between 7:00 a.m. and 9:00 a.m. and the PM peak hour between 4:00 p.m. and 6:00 p.m. on a regular weekday. These are the peak commute hours during which most traffic congestion occurs on the roadways.

Study intersections were evaluated under six different scenarios to determine the proposed project's effects on level of service (LOS). These scenarios provide a detailed analysis of the incremental effects of the proposed project on traffic conditions, and allow a comparison of the traffic anticipated to be generated by the proposed project to the amount of traffic expected to be generated by future development. Each of the scenarios is described below.

[51] This intersection is referred to as the Ruus Road/Industrial Parkway W intersection throughout this document for ease of reference.

- **Existing (2019).** This condition evaluates the study intersections based on existing traffic controls, lane geometry, and traffic counts.

- **Existing Plus Project.** This condition evaluates the study intersections based on the Existing (2019) condition with the addition of traffic generated by the proposed project.

- **Background (2024).** This condition evaluates the study intersections based on a 5-year interpolation between Existing (2019) conditions and Cumulative (2035) model runs using the Hayward General Plan Update Travel Demand Model. The SR-238 Phase 2 project is currently underway and LSA has reviewed the construction plans; there are no changes to the roadway configuration at the study intersections.

- **Background Plus Project.** This condition evaluates the study intersections based on the Background (2024) condition with the addition of traffic generated by the proposed project.

- **Cumulative.** This condition evaluates the study intersections based on a 2035 future-year projection of traffic conditions. The Hayward General Plan Update Travel Demand Model is used to develop regional traffic growth and traffic generated by the development build out in Hayward in this condition.

- **Cumulative Plus Project.** This condition evaluates the study intersections based on the Cumulative (2035) condition with the addition of traffic generated by the proposed project.

In addition, an alternative Cumulative analysis was conducted to evaluate the project's impact based on two Interstate 880 (I-880) interchange improvements being proposed by the Alameda County Transportation Commission (ACTC). Located at the intersection of the I-880 Southbound Ramps/Industrial Parkway, the two proposed improvement alternatives would reconfigure the intersection geometry, with Alternative 1 being analyzed with loop-on and slip-on ramps (partial cloverleaf interchange) and Alternative 2 with a diamond interchange configuration.

Analysis Methodology. In accordance with the City's guidelines, LSA used the Highway Capacity Manual, 2000 Edition (HCM) (TRB 2010) methodology using the Synchro (Version 10) software to determine intersection levels of service (LOS) at the signalized and unsignalized study area intersections. The HCM analysis was also used to evaluate potential queuing for all exclusive turning movements and compared to the existing available storage.

The HCM signalized intersection methodology presents LOS in terms of control delay (in seconds per vehicle). The HCM unsignalized intersection methodology presents LOS in terms of total intersection delay and approach delay of the major and minor streets (in seconds per vehicle). The resulting delay is expressed in terms of LOS.

LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations. LOS is assigned along the following letter gradient where LOS A represents free flow activity and LOS F represents overcapacity operation. Table 6.T provides a qualitative description of LOS A through LOS

F. The relationship between LOS and the delay (in seconds) at signalized and unsignalized intersections is shown in Table 6.U.

The City considers LOS E (80 seconds of delay) as the upper limit of satisfactory at signalized intersections. Therefore, a potentially significant impact would occur at a signalized or unsignalized intersection if the intersection operates at LOS F without the project under Existing or Cumulative conditions and the addition of the project under Existing Plus Project or Cumulative Plus Project conditions results in an increase in the average control delay of five seconds or greater when compared to the associated No Project condition.

Table 6.T: Level of Service Descriptions

LOS	Description
A	No approach phase is fully utilized by traffic, and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are nearing full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. This level represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is attained no matter how great the demand.
F	This level describes forced-flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, speed can drop to zero.

Source: LSA (2019).
LOS = level of service

Table 6.U: Level of Service Delay

Levels of Service	Signalized Intersection Delay (seconds)	Unsignalized Intersection Delay (seconds)
A	≤10.0	≤10.0
B	>10.0 and ≤20.0	>10.0 and ≤15.0
C	>20.0 and ≤35.0	>15.0 and ≤25.0
D	>35.0 and ≤55.0	>25.0 and ≤35.0
E	>55.0 and ≤80.0	>35.0 and ≤50.0
F	>80.0	>50.0

Source: *Highway Capacity Manual* (Transportation Research Board 2010).

Project Trip Estimates. The amount of traffic produced by a new development and the locations where that traffic would appear are typically estimated using a three-step process: (1) trip generation; (2) trip distribution; and (3) trip assignment. In determining project trip generation, the

magnitude of traffic entering and exiting the site was estimated for the weekday AM and PM peak hours. As part of the project trip distribution step, an estimate was made of the directions to and from which the project trips would travel. In the project trip assignment step, the project trips were assigned to specific streets and intersections in the study area.

The daily and peak-hour trips for the proposed project were generated using trip rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (2012). Based on direction from City staff, adjustments were made for project residents and employees who may utilize Bay Area Rapid Transit (BART) as opposed to drive their own personal vehicles (i.e., 10 percent reduction of project trips). In addition, a pass-by trip reduction has been applied to the retail component of the project (i.e., 35 percent reduction of retail trips). Pass-by trips are made by drivers already on an adjacent/nearby roadway and, therefore, are not additive trips (e.g., stopped by the retail use on the way home from work).

Trip generation estimates for the proposed project are shown on Table 6.V. As shown on Table 6.V, the proposed project would generate 1,592 net average daily trips, 163 net AM peak-hour trips (59 in and 104 out), and 182 net PM peak-hour trips (103 in and 79 out).

Table 6.V: Project Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Condo/Townhome		DU	5.81	0.07	0.37	0.44	0.35	0.17	0.52
Specialty Retail Center		TSF	44.32	0.00	0.00	0.00	1.19	1.52	2.71
Day Care Center		TSF	74.06	6.46	5.72	12.18	5.80	6.54	12.34
Project Trip Generation									
Condo/Townhome	189	DU	1,098	13	70	83	66	32	98
Specialty Retail Center	2.773	TSF	123	0	0	0	3	5	8
Day Care Center	8.048	TSF	596	52	46	98	47	53	100
Total			**1,817**	**65**	**116**	**181**	**116**	**90**	**206**
Project Trip Adjustments									
BART Reduction (Total Project Trips)		10%	182	6	12	18	12	9	21
Pass-By Reduction (Retail Trips)		35%	43	0	0	0	1	2	3
Total			**225**	**6**	**12**	**18**	**13**	**11**	**24**
Net New Trips (Trip Generation - Adjustments)			**1,592**	**59**	**104**	**163**	**103**	**79**	**182**

Source: Traffic Impact Analysis (LSA 2019)

[1] Trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 9th Edition (2012).
Land Use Code (230) - Residential Condominium/Townhouse
Land Use Code (826) - Specialty Retail Center
Land Use Code (565) - Day Care Center

ADT = average daily trips
BART = Bay Area Rapid Transit
DU = dwelling unit
TSF = thousand square feet

Existing and Existing Plus Project Conditions. Table 6.W summarizes the results of the existing AM and PM peak-hour LOS analysis for the study area intersections using the HCM methodology. As Table 6.W indicates, the study area intersections operate at acceptable LOS (LOS E or better) during the AM and PM peak hours, with the exception of Industrial Parkway Southwest/Whipple Avenue (LOS F) in the PM peak hour.

Table 6.W summarizes the results of the Existing Plus Project AM and PM peak-hour LOS analysis for the study area intersections using the HCM methodology. As Table 6.W indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours with implementation of the project, with the exception of Industrial Parkway Southwest/Whipple Avenue (LOS F) in the PM peak hour. Because the project would not increase the deficient PM peak-hour delay by more than five seconds, a significant intersection impact would not occur at Industrial Parkway Southwest/Whipple Avenue.

Background and Background Plus Project Conditions. Table 6.X summarizes the results of the Background AM and PM peak-hour LOS analysis for the study area intersections using the HCM methodology. As Table 6.X indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours, with the exception of Ruus Road/Industrial Parkway West (LOS F) in the AM and PM peak hours and Industrial Parkway Southwest/Whipple Avenue (LOS F) in the AM and PM peak hours.

Table 6.X summarizes the results of the Background Plus Project AM and PM peak-hour LOS analysis for the study area intersections using the HCM methodology. As Table 6.X indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours with implementation of the project, with the exception of Ruus Road/Industrial Parkway West (LOS F) in the AM and PM peak hours and Industrial Parkway Southwest/Whipple Avenue (LOS F) in the AM and PM peak hours. Because the project would not increase the deficient AM and PM peak-hour delay by more than 5 seconds, a significant intersection impact would not occur at Ruus Road/Industrial Parkway West or Industrial Parkway Southwest/Whipple Avenue.

Cumulative and Cumulative Plus Project Conditions. Table 6.Y summarizes the results of the Cumulative AM and PM peak-hour LOS analysis for the study area intersections using the HCM methodology. As Table 6.Y indicates, most study area intersections are forecast to operate at an unacceptable LOS (LOS F) in the peak hours, including the following intersections:

- Mission Boulevard (SR-238)/Harder Road (LOS F in the AM and PM peak hours)
- Mission Boulevard (SR-238)/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Mission Boulevard (SR-238)/Whipple Road (LOS F in the AM peak hour)
- Dixon Street/Valle Vista Avenue (LOS F in the AM and PM peak hours)
- Huntwood Avenue/Tennyson Road (LOS F in the AM and PM peak hours)
- Huntwood Avenue/Industrial Parkway West (LOS F in the AM and PM peak hours)

- Ruus Road/Industrial Parkway West (LOS F in the AM and PM peak hours)
- I-880 Southbound Ramps/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Industrial Parkway Southwest/Whipple Avenue (LOS F in the AM and PM peak hours)

Table 6.Y summarizes the results of the Cumulative Plus Project AM and PM peak-hour LOS analysis for the study area intersections using the HCM methodology. As Table 6.Y indicates, most study area intersections are forecast to operate at an unacceptable LOS (LOS F) in the peak hours, including the following intersections:

- Mission Boulevard (SR-238)/Harder Road (LOS F in the AM and PM peak hours)
- Mission Boulevard (SR-238)/Industrial Parkway West (LOS F in the AM peak hour)
- Mission Boulevard (SR-238)/Whipple Road (LOS F in the AM peak hour)
- Dixon Street/Valle Vista Avenue (LOS F in the AM and PM peak hours)
- Huntwood Avenue/Tennyson Road (LOS F in the AM and PM peak hours)
- Huntwood Avenue/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Ruus Road/Industrial Parkway West (LOS F in the AM and PM peak hours)
- I-880 Southbound Ramps/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Industrial Parkway Southwest/Whipple Avenue (LOS F in the AM and PM peak hours)

Because the project would not increase the deficient AM or PM peak-hour delays by more than five seconds, a significant impact would not occur at any intersection projected to operate at a deficient LOS under the Cumulative Plus Project condition.

Table 6.W: Existing Plus Project Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	36.6	D	AM	–	36.9	D	AM	0.3	No
			PM	–	37.4	D	PM	–	37.7	D	PM	0.3	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	23.1	C	AM	–	25.4	C	AM	2.3	No
			PM	–	25.3	C	PM	–	27.2	C	PM	1.9	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	8.4	A	AM	–	10.4	B	AM	2.0	No
			PM	–	6.2	A	PM	–	10.2	B	PM	4.0	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	29.8	C	AM	–	30.3	C	AM	0.5	No
			PM	–	28.7	C	PM	–	29.5	C	PM	0.8	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	19.8	B	AM	–	19.9	B	AM	0.1	No
			PM	–	17.5	B	PM	–	17.6	B	PM	0.1	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	NB	12.3	B	AM	NB	12.3	B	AM	0	No
			PM	NB	12.9	B	PM	NB	13.0	B	PM	0.1	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	29.8	C	AM	–	30.7	C	AM	0.9	No
			PM	–	31.9	C	PM	–	32.7	C	PM	0.8	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	47.2	D	AM	–	47.9	D	AM	0.7	No
			PM	–	48.4	D	PM	–	48.9	D	PM	0.5	
9	Ruus Road/Industrial Parkway West	Signal	AM	–	25.0	C	AM	–	25.7	C	AM	0.7	No
			PM	–	20.7	C	PM	–	21.9	C	PM	1.2	
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	24.0	C	AM	–	23.9	C	AM	-0.1	No
			PM	–	28.6	C	PM	–	28.6	C	PM	0	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	49.4	D	AM	–	49.7	D	AM	0.3	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.3	
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*				AM	NB	8.8	A	AM	N/A	N/A
							PM	NB	9.0	A	PM	N/A	

Source: Traffic Impact Analysis (LSA 2019)
Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.
Δ = change
LOS = level of service
N/A = not applicable (future intersection)
NB = northbound; SB = southbound

Table 6.X: Background Plus Project Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	49.6	D	AM	–	50.7	D	AM	1.1	No
			PM	–	56.3	E	PM	–	57.8	E	PM	1.5	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	25.8	C	AM	–	28.3	C	AM	2.5	No
			PM	–	28.2	C	PM	–	29.9	C	PM	1.7	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	14.6	B	AM	–	13.5	B	AM	-1.1[1]	No
			PM	–	8.3	A	PM	–	12.8	B	PM	4.5	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	38.6	D	AM	–	40.3	D	AM	1.7	No
			PM	–	44.9	D	PM	–	47.5	D	PM	2.6	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	30.1	C	AM	–	31.1	C	AM	1	No
			PM	–	19.2	B	PM	–	19.3	B	PM	0.1	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	19.1	C	AM	SB	19.3	C	AM	0.2	No
			PM	SB	20.3	C	PM	SB	20.5	C	PM	0.2	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	39.2	D	AM	–	41.5	D	AM	2.3	No
			PM	–	39.4	D	PM	–	40.9	D	PM	1.5	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	73.7	E	AM	–	74.7	E	AM	1	No
			PM	–	66.4	E	PM	–	67.3	E	PM	0.9	
9	Ruus Road/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.5	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	2.8	
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	30.8	C	AM	–	30.9	C	AM	0.1	No
			PM	–	40.7	D	PM	–	40.8	D	PM	0.1	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.3	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.5	
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*				AM	NB	8.8	A	AM	N/A	N/A
							PM	NB	9.1	A	PM	N/A	

Source: Traffic Impact Analysis (LSA 2019)
Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.
Δ = change
LOS = level of service
N/A = not applicable (future intersection)
NB = northbound
SB = southbound

Table 6.Y: Cumulative Plus Project Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	3.8	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3.9	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	39.5	D	AM	–	42.5	D	AM	3	No
			PM	–	37.0	D	PM	–	38.2	D	PM	1.2	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	51.4	D	AM	–	56.9	E	AM	5.5	No
			PM	–	44.8	D	PM	–	41.1	D	PM	-3.7[1]	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4.9	No
			PM	–	71.1	E	PM	–	75.0	D	PM	3.9	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	2.2	No
			PM	–	58.1	E	PM	–	59.8	E	PM	1.7	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	>50.0	F	AM	SB	>50.0	F	AM	1.2	No
			PM	NB	>50.0	F	PM	NB	>50.0	F	PM	1.2	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4.1	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3.7	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.2	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.8	
9	Ruus Road/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.2	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3	
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	0.5	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	0.2	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.6	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.5	
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*				AM	NB	9.0	A	AM	N/A	N/A
							PM	NB	9.3	A	PM	N/A	

Source: Traffic Impact Analysis (LSA 2019)
Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.
Δ = change
LOS = level of service
N/A = not applicable (future intersection)
NB = northbound; SB = southbound

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Cumulative Plus Project Conditions with I-880 Improvements. As noted previously, the ACTC is considering two improvement alternatives at the I-880 interchange along Industrial Parkway, which would alter the roadway geometry at the intersection of the I-880 Southbound Ramps/Industrial Parkway West. The I-880/Industrial Parkway West interchange is an incomplete interchange and currently lacks a northbound off-ramp to Industrial Parkway West, forcing local traffic to exit at the Whipple Road interchange. This section includes an analysis of the project Cumulative year condition with the proposed intersection alternatives in the No Project and Plus Project conditions.

Alternative 1. With implementation of Alternative 1, the intersection will be reconstructed into a partial cloverleaf interchange alternative in this alternative condition. The geometry at the intersection of the I-880 Southbound Ramps/Industrial Parkway West will become three eastbound through lanes, two westbound through lanes, and one westbound right-turn lane. The existing northbound partial cloverleaf looped on-ramp will remain, and a new southbound on-ramp onto I-880 will be created, adding the southern leg to this intersection.

Alternative 2. With implementation of Alternative 2, the intersection will be configured as a diamond interchange. The geometry at the intersection of the I-880 Southbound Ramps/ Industrial Parkway West will become two eastbound through lanes, one eastbound right, three westbound through lanes, and one southbound on-ramp to the I-880 freeway. A new south-bound on-ramp onto I-880 will be created on the southern leg of the intersection and the existing partial cloverleaf looped on-ramp on the northern leg will be removed.

Table 6.Z summarizes the results of the Cumulative with I-880 Improvement alternatives LOS analysis. As Table 6.Z indicates, most study area intersections are forecast to operate at an unacceptable LOS (LOS F) in the peak hours, including the following intersections:

- Mission Boulevard (SR-238)/Harder Road (LOS F in the AM and PM peak hours)
- Mission Boulevard (SR-238)/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Mission Boulevard (SR-238)/Whipple Road (LOS F in the AM peak hour)
- Dixon Street/Valle Vista Avenue (LOS F in the AM and PM peak hours)
- Huntwood Avenue/Tennyson Road (LOS F in the AM and PM peak hours)
- Huntwood Avenue/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Ruus Road/Industrial Parkway West (LOS F in the AM and PM peak hours)
- I-880 Southbound Ramps/Industrial Parkway West (LOS F in the AM and PM peak hours)
- Industrial Parkway Southwest/Whipple Avenue (LOS F in the AM and PM peak hours)

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Table 6.Z: Cumulative Plus Project with I-880 Improvements Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	4.6	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	40.1	D	AM	–	43.3	D	AM	3.2	No
			PM	–	38.6	D	PM	–	39.9	D	PM	1.3	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	50.1	D	AM	–	54.2	D	AM	4.1	No
			PM	–	45.6	D	PM	–	41.7	D	PM	-3.9[1]	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	5.0	No
			PM	–	69.2	E	PM	–	73.0	F	PM	3.8	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	2.2	No
			PM	–	51.2	D	PM	–	52.8	D	PM	1.6	
6	Dixon Street/Valle Vista Avenue	Signal	AM	–	>50.0	F	AM	–	>50.0	F	AM	0.9	No
			PM	–	>50.0	F	PM	–	>50.0	F	PM	1.5	
7	Huntwood Avenue/Tennyson Road	Stop	AM	WB	>80.0	F	AM	WB	>80.0	F	AM	4	No
			PM	WB	>80.0	F	PM	WB	>80.0	F	PM	3.8	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.4	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3	
9	Ruus Road/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	6.4	**Yes**
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3	
10	I-880 SB Ramps/Industrial Parkway West – Alternative 1	Signal	AM	–	16.5	B	AM	–	16.5	B	AM	0	No
			PM	–	15.6	B	PM	–	17.1	B	PM	0	
	I-880 SB Ramps/Industrial Parkway West – Alternative 2		AM		46.2	D	AM		46.7	D	AM	0.5	No
			PM		65.6	E	PM		65.8	E	PM	0.2	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	2.6	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	2.2	
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*				AM	NB	9.0	A	AM	N/A	N/A
							PM	NB	9.3	A	PM	N/A	

Source: Traffic Impact Analysis (LSA 2019)
Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.
Δ = change
LOS = level of service
N/A = not applicable (future intersection)
NB = northbound; SB = southbound; WB = westbound

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As shown in Table 6.Z, the proposed project would increase the deficient AM peak-hour delay by more than five seconds at the Ruus Road/Industrial Parkway West.

The General Plan EIR identified a significant and unavoidable impact related to LOS at the Ruus Road/Industrial Parkway West intersection. At the time, there were no feasible mitigation measures to reduce the impact to a less-than-significant level. However, the implementation of the I-880 Improvements, which were not considered in the General Plan EIR, in combination with adjusted signal timing splits at the Ruus Road/Industrial Parkway West intersection, would reduce impacts to a less-than-significant level, as shown in Table 6.AA. Policy M-4.4 in the City's General Plan encourages alternatives to road construction and expansion, such as adaptive signals or coordinated signal timings, as necessary for improving traffic flows. Therefore, consistent with General Plan Policy M-4.4, the following standard condition of approval would be incorporated into the proposed project and would ensure that the proposed project would not result in any new or more significant impacts than those that were previously analyzed.

SCA TRA-1: Consistent with Policy M-4.4 of the City's General Plan, the project applicant shall fund signal timing adjustments to allow more green time for the impacted approaches at the intersection of Ruus Road/Industrial Parkway West intersection.

Table 6.AA: Cumulative with I-880 Improvements Plus Project with Mitigation Level of Service Summary

Study Intersection	Peak Hour	Cumulative		Cumulative + Project		Change (sec)	Cumulative + Project		Delay Reduction (sec)[1]
		Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	
9. Ruus Road/ Industrial Park West	AM	>80.0	F	>80.0	F	7.0	>80.0	F	>60.0
	PM	>80.0	F	>80.0	F	2.9	>80.0	F	>60.0

Source: Traffic Impact Analysis (LSA 2019)
= Unsatisfactory LOS
Note: For an intersection operating at LOS F in the (No Project) condition, a significant impact occurs when the project adds more than 5 seconds of delay.
[1] Delay Reduction (sec) = Cumulative + Project (With Improvement) Delay – Cumulative (Without Improvement) Delay
LOS = level of service
sec = seconds

Intersection Queueing Analysis. The 95th percentile queues of the turn lanes of the study area intersections for anticipated inbound and outbound project turn movements were analyzed using the HCM 2000 methodology. The purpose of this analysis is to determine the adequacy of the existing turn storage capacity and identify the potential for vehicles to spill back into the through lanes. The 95th-percentile queue is defined to be the queue length that has only a five percent probability of being exceeded during the analysis time period. It is a useful parameter for determining the appropriate length of turn pockets, but it is not typical of what an average driver would experience.

Existing and Existing Plus Project Queues. The specific intersections and turn movements where the existing vehicle queues exceed the available turn lane storage lengths are summarized in

Error! Reference source not found.. As shown in **Error! Reference source not found.**, the vehicle queues currently exceed the storage lengths at 9 turn lanes (at 4 total intersections). However, the project would contribute one vehicle (25 feet) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Existing conditions.

Background and Background Plus Project Queues. Similar to the Existing and Existing Plus condition, the Background and Background Plus condition would exceed the storage lengths at 13 turn lanes (at six total intersections), as shown in Table 6.CC. However, the proposed project would contribute one vehicle (25 feet) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Background conditions.

Cumulative and Cumulative Plus Project Queues. Similar to the Background and Background Plus condition, the Background and Background Plus condition would exceed the storage lengths at 24 turn lanes (at 7 total intersections), as shown in Table 6.DD. However, the project would contribute one vehicle (25 feet) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Cumulative conditions.

Cumulative with I-880 Improvements and Cumulative with I-880 Improvements Plus Project Queues. Similar to the Cumulative and Cumulative Plus condition, the Cumulative with I-880 Improvements and Cumulative with I-880 Improvements Plus condition will exceed the storage lengths at 24 turn lanes (at 7 total intersections), as shown in Table 6.EE. However, the project would contribute one vehicle (25 feet) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Cumulative with I-880 Improvements conditions.

Pedestrian, Bicycle, and Transit Analysis. Implementation of the proposed project would not result in any changes to the existing transit services and facilities, pedestrian circulation, and bicycle network. Transit facilities are accessible to and from the project site, with AC Transit bus stops along Mission Boulevard in the vicinity of Valle Vista Avenue and Tennyson Road. The proposed project would maintain the existing Class II bikeways along Tennyson Road. To accommodate bicycle commuting, the proposed project would provide bicycle parking on site.

Pursuant to Section 7-1.10 of the City's Municipal Code, any project that would result in an increase in the density of use of the property or increase the traffic generation on the street shall provide for the construction of curbs, gutters, sidewalks, street lighting, and street paving to meet the existing street pavement. Therefore, the proposed project would be required to improve the existing sidewalk infrastructure along the project frontage on Mission Boulevard.

Additionally, as noted in Section 6.14, the proposed project would be consistent with the density range and uses assumed for the project site within the City's General Plan and Zoning Ordinance. Therefore, the proposed project would not result in the generation of additional transit trips beyond what was already planned for the site, and this impact would be less than significant.

Table 6.BB: Existing Plus Project Intersection Queueing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	247	351	282	408	252	364	286	414
		Dual EBL	100[1]	286	174	259	156	286	175	259	156
		EBR	280	328	102	300	83	331	106	305	83
		SBL	495	23	44	58	84	23	43	58	84
		Dual WBL	235	146	101	98	72	148	102	101	73
		WBR	140	29	0	38	10	29	0	38	10
2	Mission Boulevard/Tennyson Road	Dual NBL	510	212	139	325	197	227	147	336	203
		Dual EBL	280[2]	317	192	293	179	317	192	293	178
		EBR	210	270	83	214	74	278	84	228	76
		SBL	235	9	28	32	64	15	38	42	78
		SBR	215	227	57	296	50	227	61	296	52
3	Mission Boulevard /Valle Vista Ave	NBL	225	59	32	47	62	59	100	47	85
		SBL	70	0	0	0	0	18	43	33	65
		WBR	50	0	0	0	0	32	21	26	12
4	Mission Boulevard /Industrial Parkway	NBL	290	298	140	270	131	298	152	270	131
		Dual EBL	200[3]	245	128	495	198	258	137	518	212
		EBR	110	233	15	437	54	233	15	437	54
		SBL	215	104	97	145	150	104	97	145	150
		WBL	125	18	30	11	20	18	30	11	20
		WBR	205	269	62	138	8	269	62	138	8
5	Whipple Road/Mission Boulevard	Dual NBL	415	283	98	266	93	283	98	266	93
		EBR	115	224	53	271	57	224	53	271	57
		SBL	290	9	16	17	24	9	16	17	24
7	Huntwood Avenue/Tennyson Road	NBL	265	91	109	151	159	91	110	151	163
		NBR	100	112	43	228	57	113	43	229	58
		EBL	170	43	65	116	132	43	66	116	133
		EBR	150	109	36	94	283	109	36	94	33
		SBL	100	169	175	74	94	171	178	78	101
		WBL	190	208	213	195	195	209	215	196	199
		WBR	100	47	16	39	14	51	19	42	16

Table 6.BB: Existing Plus Project Intersection Queueing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	225	209	140	446	605	209	140	446
		NBR	100[1]	225	109	49	298	140	109	50	298
		EBL	280	250	73	99	289	495	73	99	289
		EBR	495	250	377	72	194	94	377	72	194
		SBL	235	150	84	111	74	128	85	112	75
		WBL	140	245	376	498	117	179	381	510	121
9	Huntwood Avenue/Industrial Parkway	NBL	140	39	58	171	172	39	58	171	174
		EBL	190	27	16	62	34	27	16	62	34
		WBL	255	363	366	293	307	369	374	298	314
		WBR	165	31	9	55	13	31	9	55	13
10	Industrial Parkway West/ I-880 SB Ramp	EBL	350	148	145	348	358	148	145	348	358
		WBR	160	493	264	217	106	498	267	221	109
		SBL	265	291	233	405	358	291	233	405	358
		SBR	300	378	64	261	55	378	64	261	55
11	I-880 NB Ramp & Whipple Road	NBL	340	529	561	185	165	529	561	185	165
		NBR	390	322	229	113	47	322	229	113	47
		Dual EBL	175	261	170	674	489	265	173	680	495
		SBL	245	306	409	240	402	306	409	240	402
		WBR	210	135	54	303	157	135	54	303	158

Source: Traffic Impact Analysis (LSA 2019)

Note: indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet).

EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

Table 6.CC: Background Plus Project Intersection Queuing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	278	444	345	579	283	455	349	586
		Dual EBL	100[1]	319	199	337	204	319	199	337	204
		EBR	280	356	162	390	164	359	167	395	177
		SBL	495	41	70	86	124	41	70	86	124
		Dual WBL	235	180	124	124	91	182	125	127	93
		WBR	140	37	7	48	21	37	7	48	21
2	Mission Boulevard/Tennyson Road	Dual NBL	510	256	162	388	229	271	170	399	234
		Dual EBL	280[2]	366	221	355	214	366	221	355	214
		EBR	210	306	89	270	83	314	89	284	84
		SBL	235	11	31	42	78	17	42	52	92
		SBR	215	268	93	356	57	268	98	356	59
3	Mission Boulevard /Valle Vista Ave	NBL	225	62	76	66	80	62	122	66	109
		SBL	70	0	0	0	0	18	43	33	66
		WBR	50	0	0	0	0	32	21	26	12
4	Mission Boulevard /Industrial Parkway	NBL	290	412	254	396	207	412	255	396	207
		Dual EBL	200[3]	296	197	553	268	309	211	576	282
		EBR	110	320	61	550	61	320	61	550	61
		SBL	215	107	133	148	176	107	133	148	176
		WBL	125	20	43	12	22	20	43	12	22
		WBR	205	274	85	140	8	274	87	140	8
5	Whipple Road/Mission Boulevard	Dual NBL	415	336	112	301	103	336	112	301	103
		EBR	115	259	57	321	62	259	57	321	62
		SBL	290	14	22	21	28	14	22	21	28
7	Huntwood Avenue/Tennyson Road	NBL	265	125	177	166	216	125	177	166	216
		NBR	100	156	51	298	67	157	51	299	67
		EBL	170	46	70	118	142	46	70	118	142
		EBR	150	120	37	111	36	120	37	111	36
		SBL	100	182	200	90	157	184	202	94	165
		WBL	190	255	271	263	279	256	271	264	281
		WBR	100	56	21	44	16	60	24	47	18

Table 6.CC: Background Plus Project Intersection Queuing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	224	161	498	729	224	161	498	734
		NBR	100[1]	115	51	354	204	115	51	354	203
		EBL	280	95	127	317	573	95	127	317	576
		EBR	495	402	75	211	120	402	75	211	122
		SBL	235	103	138	94	158	104	138	95	159
		WBL	140	422	610	138	206	427	620	142	212
9	Huntwood Avenue/Industrial Parkway	NBL	140	234	315	413	526	234	315	413	526
		EBL	190	27	17	63	36	27	17	63	36
		WBL	255	545	474	437	440	551	483	442	448
		WBR	165	32	10	56	13	32	10	56	13
10	Industrial Parkway West/ I-880 SB Ramp	EBL	350	172	163	377	401	172	163	377	401
		WBR	160	524	379	235	135	529	384	239	137
		SBL	265	296	238	440	426	296	238	440	426
		SBR	300	383	64	293	58	383	64	293	58
11	I-880 NB Ramp & Whipple Road	NBL	340	537	572	188	167	537	572	188	167
		NBR	390	328	236	115	49	328	236	115	49
		Dual EBL	175	365	269	847	654	369	273	853	660
		SBL	245	432	639	357	637	432	639	357	637
		WBR	210	209	64	455	438	209	64	455	440

Source: Traffic Impact Analysis (LSA 2019)

Note: indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet).

EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

Table 6.DD: Cumulative Plus Project Intersection Queueing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	347	624	484	923	352	636	488	930
		Dual EBL	100[1]	390	248	508	358	390	249	508	358
		EBR	280	416	340	589	655	419	347	594	667
		SBL	495	79	122	148	209	79	122	148	209
		Dual WBL	235	256	171	181	128	258	172	184	130
		WBR	140	55	29	70	46	55	29	70	46
2	Mission Boulevard/Tennyson Road	Dual NBL	510	352	211	526	306	367	219	537	313
		Dual EBL	280[2]	475	301	491	318	475	301	491	318
		EBR	210	384	99	392	100	392	100	406	102
		SBL	235	15	38	63	106	21	48	73	118
		SBR	215	358	190	487	202	358	193	487	205
3	Mission Boulevard /Valle Vista Ave	NBL	225	67	153	109	119	158	158	109	188
		SBL	70	0	0	0	0	18	43	33	67
		WBR	50	0	0	0	0	32	21	26	0
4	Mission Boulevard /Industrial Parkway	NBL	290	663	550	672	502	663	550	672	522
		Dual EBL	200[3]	408	378	682	512	421	392	705	545
		EBR	110	512	91	797	172	512	91	797	187
		SBL	215	114	174	153	293	114	174	153	297
		WBL	125	25	58	14	38	25	58	14	38
		WBR	205	284	246	145	91	284	246	145	91
5	Whipple Road/Mission Boulevard	Dual NBL	415	454	146	378	123	454	146	378	123
		EBR	115	337	63	430	90	337	63	430	90
		SBL	290	26	32	31	37	26	32	31	37
7	Huntwood Avenue/Tennyson Road	NBL	265	199	363	200	330	199	364	200	331
		NBR	100	253	63	452	148	254	63	453	149
		EBL	170	52	78	121	144	52	78	121	144
		EBR	150	143	40	147	51	143	40	147	52
		SBL	100	212	301	124	270	214	305	128	276
		WBL	190	359	455	411	548	360	456	412	548
		WBR	100	75	32	1044	24	79	34	58	26

Table 6.DD: Cumulative Plus Project Intersection Queueing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	257	212	611	972	257	210	611	972
		NBR	100[1]	115	56	354	417	115	56	354	417
		EBL	280	143	195	378	720	143	194	378	720
		EBR	495	457	76	247	170	457	76	247	171
		SBL	235	146	246	138	262	147	248	139	264
		WBL	140	524	928	183	268	529	945	187	273
9	Huntwood Avenue/Industrial Parkway	NBL	140	664	873	944	1215	664	873	944	1215
		EBL	190	28	19	65	41	28	19	65	41
		WBL	255	945	1085	754	979	951	1093	759	984
		WBR	165	33	10	58	21	33	10	58	21
10	Industrial Parkway West/ I-880 SB Ramp	EBL	350	226	203	440	497	226	203	440	497
		WBR	160	592	555	275	185	597	560	279	189
		SBL	265	306	252	517	542	306	252	517	542
		SBR	300	393	65	363	64	393	65	363	64
11	I-880 NB Ramp & Whipple Road	NBL	340	555	601	194	171	555	601	194	171
		NBR	390	340	248	119	52	340	248	119	52
		Dual EBL	175	595	480	1,228	1012	599	485	1,234	1017
		SBL	245	710	1126	614	1134	710	1126	614	1134
		WBR	210	371	116	789	1084	371	116	789	1086

Source: Traffic Impact Analysis (LSA 2019)

Note: indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet).

EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

Table 6.EE: Cumulative with I-880 Improvements Plus Project Intersection Queuing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	340	606	430	803	345	619	488	812
		Dual EBL	100[1]	383	244	481	326	383	244	508	326
		EBR	280	410	325	542	568	413	333	594	583
		SBL	495	80	123	169	237	80	123	148	237
		Dual WBL	235	255	170	197	137	257	171	184	139
		WBR	140	54	28	79	49	54	28	70	49
2	Mission Boulevard/Tennyson Road	Dual NBL	510	365	218	571	335	380	225	582	348
		Dual EBL	280[2]	484	311	528	357	484	311	528	357
		EBR	210	392	100	425	125	400	109	439	144
		SBL	235	15	38	62	105	21	48	72	117
		SBR	215	371	198	523	213	371	201	523	217
3	Mission Boulevard /Valle Vista Ave	NBL	225	67	81	115	125	67	81	115	203
		SBL	70	0	0	0	0	18	33	33	67
		WBR	50	0	0	0	0	32	18	26	0
4	Mission Boulevard /Industrial Parkway	NBL	290	639	521	623	471	639	532	623	471
		Dual EBL	200[3]	402	368	683	511	417	374	710	539
		EBR	110	496	87	807	189	496	86	807	189
		SBL	215	113	172	152	295	113	172	152	295
		WBL	125	25	58	14	38	25	58	14	38
		WBR	205	286	247	145	91	286	247	145	91
5	Whipple Road/Mission Boulevard	Dual NBL	415	456	147	414	134	456	147	414	134
		EBR	115	337	63	434	93	337	63	434	93
		SBL	290	26	32	30	36	26	32	30	36
7	Huntwood Avenue/Tennyson Road	NBL	265	202	374	189	310	202	375	189	310
		NBR	100	257	63	441	137	258	63	442	139
		EBL	170	50	76	140	161	50	76	140	161
		EBR	150	144	40	148	52	144	40	148	53
		SBL	100	212	300	126	273	214	305	130	281
		WBL	190	365	466	431	580	366	467	432	581
		WBR	100	72	31	66	32	76	33	69	33

Table 6.EE: Cumulative with I-880 Improvements Plus Project Intersection Queuing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	242	202	586	941	242	203	586	941
		NBR	100[1]	123	55	460	387	123	55	460	387
		EBL	280	147	199	404	782	147	200	404	782
		EBR	495	464	77	260	183	464	77	260	184
		SBL	235	148	251	138	262	149	255	139	264
		WBL	140	520	929	176	258	525	946	180	263
9	Huntwood Avenue/Industrial Parkway	NBL	140	512	682	874	1131	512	682	874	1131
		EBL	190	53	38	119	83	53	39	119	84
		WBL	255	952	1109	758	983	958	1116	763	988
		WBR	165	33	10	58	21	33	10	58	21
10	Industrial Parkway West/ I-880 SB Ramp – Alternative 1	EBR	300	218	25	499	36	218	25	499	36
		SBL	265	306	122	454	176	306	122	454	176
		SBR	300	397	436	379	394	397	436	379	394
		WBR	250	579	109	292	49	584	111	296	50
	Industrial Parkway West/ I-880 SB Ramp – Alternative 2	EBR	300	218	60	499	223	218	60	499	223
		SBL	265	306	126	454	193	306	126	454	193
		SBR	300	397	407	379	381	397	407	379	381
		WBL	250	579	642	292	339	584	651	296	349
11	I-880 NB Ramp & Whipple Road	NBL	340	314	277	129	118	314	277	129	118
		NBR	390	324	232	119	52	324	232	119	52
		Dual EBL	175	626	509	1210	995	630	512	1216	1001
		SBL	245	668	1055	622	1148	668	1055	622	1148
		WBR	210	362	124	803	1032	362	124	803	1035

Source: Traffic Impact Analysis (LSA 2019)
Note: indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.
[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).
[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).
[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet).
EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

6.17.2.2 CEQA Guidelines Section 15064.3 *(Criterion b)*

Effective December 28, 2018, the CEQA Guidelines were updated and require the evaluation of vehicle miles travelled (VMT) as the criteria for analyzing transportation impacts for land use projects. As noted in CEQA Guidelines Section 15064.3(c), the provisions of CEQA Guidelines Section 15064.3 shall apply prospectively as described in CEQA Guidelines Section 15007. A lead agency may elect to be governed by the provisions of CEQA Guidelines Section 15064.3 immediately; however, beginning on July 1, 2020, the provisions of this section shall apply statewide. The City of Hayward, as lead agency, has not yet elected to be governed by the provisions of CEQA Guidelines Section 15064.3. Therefore, the proposed project would neither conflict nor be inconsistent with CEQA Guidelines Section 15064.3, and there would be no impact.

6.17.2.3 Design Features and Emergency Access *(Criteria c and d)*

Project Driveways. Access to the project site would be provided by a new driveway along Mission Boulevard, which would create the fourth leg of the Mission Boulevard/Valle Vista Avenue intersection. A new unsignalized full-access driveway would also be provided on Tennyson Road. Based on the truck-turning analysis, large trucks, including fire trucks, (wheelbase of 50 feet) would be able to make safe turns in/out of the signalized access of Valle Vista Avenue/Mission Boulevard and single-unit trucks (SU-30) would be able to make safe turns in/out of the unsignalized intersection of the proposed project driveway/Tennyson Drive.

As previously discussed, an LOS analysis has been conducted for Mission Boulevard/Valle Vista Avenue–Project Driveway and Project Driveway/Tennyson Road. Based on the results of this analysis, these intersections are forecast to operate at satisfactory LOS E or better for Existing Plus Project, Background Plus Project, and Cumulative Plus Project conditions during both the AM and PM peak hours.

Sight Distance. A sight distance analysis was conducted at the proposed full-access driveway along Tennyson Road to ensure driver visibility and safety. The Tennyson Road speed limit is 25 mph in the project vicinity. According to Table 6C-2 of the 2014 Caltrans' California Manual on Uniform Traffic Control Devices (CAMUTCD), the stopping sight distance for a roadway with a speed limit of 25 mph is 155 feet. There are no sight distance obstructions along Tennyson Road, and more than 155 feet of sight distance is provided at the driveway. Therefore, the project driveway would meet the minimum sight distance requirements specified in the CAMUTCD, and this impact would be less than significant.

6.17.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, implementation of the proposed project would not result in any new or more severe significant impacts related to transportation than those identified in the Previous CEQA Documents. Implementation of SCA TRA-1 would ensure that potential impacts to level of service at study area intersections would be less than significant.

6.18 TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the land-scape, sacred place, or object with cultural value to a California Native American tribe, and that is:						
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)? Or	☐	☐	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivi-sion (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☐	☐	☒

6.18.1 Previous CEQA Documents Findings

The Previous CEQA Documents did not include an evaluation of potential impacts to tribal cultural resources, as they were prepared before the implementation of Assembly Bill 52. However, impacts to archaeological resources and human remains interred outside of formal cemeteries were addressed in the Previous CEQA Documents and impacts were reduced with implementation of standard conditions of approval (see Section 6.5, Cultural Resources).

6.18.2 Project Analysis

AB 52 requires a lead agency to begin consultation with any California Native American tribe that is traditionally and culturally affiliated with the geographic area of the project. Consultation shall occur prior to the release of a negative declaration or mitigated negative declaration if:

1. The California Native American tribe that is traditionally and culturally affiliated with the geographic area requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects; and

2. The California Native American tribe responds, in writing, within 30 days of receipt of the formal notification and requests the consultation (Public Resources Code Section 21080.3.1[d]).

One tribe, the Ione Band of Miwok Indians, has requested AB 52 consultation with the City for projects subject to CEQA.

The City sent the project notification letter to Sara D. Setshwaelo of the Ione Band of Miwok Indians on August 13, 2019. The letter provided a brief project description and requested any information regarding tribal cultural resources in the project area. No response to the letter has been received to date.

No tribal cultural resources (as defined in Public Resources Code Section 21074) were identified on the project site. However, the project includes ground-disturbing activities that could result in the unanticipated or accidental discovery of tribal cultural resources. Implementation of the City's standard conditions of approval for grading operations (SCA CUL-1 as identified in Section 6.5) would mitigate impacts to less than significant because the standard conditions of approval require grading operations to halt if human remains or cultural resources are discovered, and the resources and/or remains must be evaluated by a qualified professional and, if necessary, mitigation plans formulated and implemented. The standard conditions of approval for grading operations would ensure that provisions are in place to protect tribal cultural resources encountered during construction. Therefore, the effect of the project would be substantially mitigated by uniformly applicable development policies.

6.18.3 Conclusion

The proposed project would not result in any new or more significant impacts related to tribal cultural resources. Implementation of the City's standard grading conditions identified in SCA CUL-1 would ensure that any potential impacts to tribal cultural resources would be reduced to a less-than-significant level.

6.19 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
Would the project:						
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☐	☒	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☐	☒	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☐	☒	☐
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☐	☒	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☐	☒	☐

6.19.1 Previous CEQA Documents Findings

The Previous CEQA Documents found less-than-significant impacts related to utilities and service systems. The General Plan EIR identified Policies PFS-1.4 to ensure that new development pays its fair share of providing new public facilities and services and/or the costs of expanding/upgrading existing facilities and services impacted by new development (e.g., water, wastewater, stormwater drainage). The General Plan EIR also identified policies that would require water conservation in order to reduce demand for increased water supplies (Policies NR-6.9, NR-6.15, and NR-6-16) and policies that would result in the diversion of solid waste (Policies PFS-7.3 and PFS-7.4).

The SH BART/Mission Blvd SEIR identified mitigation measures to address drainage impacts, and no other mitigation measures were warranted. The SH BART/Mission Blvd SEIR found that the City's wastewater treatment plant would have sufficient capacity to accommodate the development assumed under the SH BART/Mission Blvd FBC Project. Additionally, the City would have sufficient water supplies to serve future development.

6.19.2 Project Analysis

6.19.2.1 Water, Wastewater, Stormwater, and Energy *(Criteria a, b and c)*

As noted in Section 4.0, Project Description, the proposed project would include connections to the existing utilities in the vicinity of the project site and would not require the expansion or relocation of existing utilities or infrastructure. The General Plan EIR identified Policy PFS-1.3 to ensure that new development would not exceed the capacity of existing water, wastewater, stormwater or other utilities without paying its fair share for any needed improvements. The City of Hayward reviews the capacity of existing utility infrastructure as part of the development review for individual projects, and no deficiencies have been identified that would require the construction or expansion of existing facilities to serve the proposed project.

As noted in Section 6.11, Land Use Planning and Section 6.14, Population and Housing, the proposed project would be consistent with the densities and land use types identified in the General Plan; therefore, the proposed development and population generated by the project would not exceed local and regional growth projections and would result in a less than significant impact related to the demand for water supplies; wastewater, water, and storm drainage facilities; and energy and telecommunications services.

Furthermore, as noted in Section 6.10, Hydrology and Water Quality, the project would increase impervious surface area on the project site by 6.49 acres which would increase both the rate and the amount of stormwater runoff generated from the project site area. The proposed BMPs would reduce the rate and amount of stormwater runoff through measures such as detention, retention, or infiltration and impacts to existing storm drainage facilities would be less than significant

In addition, as discussed in Section 6.6, Energy, the proposed project would result in less-than-significant impacts related to energy standards and use, and would comply with CALGreen regulations and be required to achieve at least a 15 percent reduction in energy usage when compared to Title 24, as required by the City's Green Building Ordinance.[52]

6.19.2.2 Solid Waste *(Criteria d and e)*

General Plan Policy PFS-7.3 requires the City to continue to coordinate with the Alameda County Waste Management Authority to ensure adequate landfill capacity in the region. Additionally, Policy PFS-7.4 requires the City to comply with the State goals regarding diversion from landfills and to strive to comply with the provisions approved by the Alameda County Waste Management Authority, which includes construction and demolition waste recycling, food scraps collection, and mandatory recycling for multifamily uses. New development, including the proposed project, is required to

[52] Hayward, City of, 2008. *Green Building Ordinances for Private Development.* September 16.

comply with Chapter 5, Article 10 of the Hayward Municipal Code, which requires the submission and approval of a Debris Recycling Statement prior to the commencement of construction activities. The proposed project would be required to comply with these policies and code requirements and this impact would be less than significant.

6.19.3 Conclusion

Based on an examination of the analysis, findings, and conclusions of the Previous CEQA Documents, implementation of the proposed project would not substantially increase the severity of significant impacts identified in the Previous CEQA Documents, nor would it result in new significant impacts related to utilities and service systems that were not identified in the Previous CEQA Documents.

6.20 WILDFIRE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:						
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐	☐	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐	☐	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐	☐	☐
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐	☐	☐
e. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐	☐	☐

6.20.1 Previous CEQA Documents Findings

Neither the General Plan EIR or the SH BART/Mission Blvd SEIR included a separate evaluation of the potential impacts related to wildfire, as they were prepared before the CEQA Guidelines were amended in December 2018. However, both of the Previous CEQA Documents evaluated the potential for wildland fire risk, which is summarized in Section 6.9, Hazards and Hazardous Materials, of this document.

6.20.2 Project Analysis

The project site is not located within a State Responsibility Area.[53] However, as noted in Section 6.9, Hazards and Hazardous Materials, the project site is located within the Wildland Urban Interface, as mapped by the City, and a High Fire Hazard Severity Zone.[54] Due to the project site location in these sensitive areas, the proposed project would be required to comply with the City's Hillside Design and Urban/Wildland Interface Guidelines, which would ensure potential impacts associated with wildfire are reduced to a less-than-significant level.

6.20.3 Conclusion

The proposed project would not result in any new or more significant impacts related to wildfire. Implementation of the City's Hillside Design and Urban/Wildland Interface Guidelines would ensure that any potential impacts related to wildfire would be reduced to a less-than-significant level.

[53] California, State of, 2019. Board of Forestry and Fire Protection. State Responsibility Area Viewer Website: bofdata.fire.ca.gov/projects-and-programs/state-responsibility-area-viewer (accessed August 8, 2019).

[54] Hayward, City of, 2014. *Draft Environmental Impact Report for the City of Hayward 2040 General Plan*. February.

6.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed in the Prior EIR	Substantially Mitigated by Uniformly Applicable Development Policies
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☐	☐	☒
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☐	☐	☒	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☐	☐	☒

6.21.1.1 Degrade the Quality of the Environment *(Criterion a)*

Implementation of SCA CUL-1 and GEO-1 would ensure historic, archaeological, tribal, and paleontological resources that could be uncovered during construction activities would be reduced to a less-than-significant level. Implementation of SCA BIO-1, BIO-2 and SCA BIO-2 would ensure that potential impacts related to special-status species and wetlands are reduced to a less-than-significant level. Therefore, development of the proposed project would not: (1) degrade the quality of the environment; (2) substantially reduce the habitat of a fish or wildlife species; (3) cause a fish or wildlife species population to drop below self-sustaining levels; (4) threaten to eliminate a plant or animal community; (5) reduce the number or restrict the range of a rare or endangered plant or animal; or (6) eliminate important examples of the major periods of California history. This impact would be less than significant with implementation of uniformly applicable development policies.

6.21.1.2 Cumulative Impacts *(Criterion b)*

As discussed in throughout the analysis in this document, impacts of the proposed project would be substantially mitigated by uniformly applicable development policies and were considered in the Previous CEQA Documents. The proposed project's impacts would be individually limited and not cumulatively considerable. The potentially significant impacts that can be reduced to a less-than-significant level with implementation of standard conditions of approval or mitigation measures identified in the Previous CEQA Documents include the topics of air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, and noise. Many of these impacts would be related to construction-period activities, would be temporary in nature, and would not substantially contribute to any potential cumulative impacts associated with these topics. Operational impacts related to air quality and noise would be mitigated through site-specific design measures.

For the topics of aesthetics, agricultural and forestry resources, energy, greenhouse gas emissions, land use and planning, mineral resources, population and housing, public services, recreation, transportation, tribal cultural resources, utilities and service systems, and wildfire, the project would have no impacts or less-than-significant impacts, and therefore, the project would not substantially contribute to any potential cumulative impacts for these topics.

The proposed project would be consistent with the density range and uses assumed for the project site within the City's General Plan and by the SH BART/Mission Blvd FBC Project. All environmental impacts that could occur as a result of the proposed project were addressed in the Previous CEQA Documents and would be reduced to a less-than-significant level through the implementation of standard conditions of approval or mitigation measures identified in the Previous CEQA documents as identified in this document.

Implementation of these measures would ensure that the impacts of the project would be below established thresholds of significance and that these impacts would not combine with the impacts of other cumulative projects to result in a cumulatively considerable impact on the environment as a result of project development. Therefore, this impact would be less than significant.

6.21.1.3 Substantially Adverse Effects *(Criterion c)*

With implementation of standard conditions of approval (SCA AIR-1 through SCA AIR-3 and SCA NOI-1 and SCA NOI-2) and mitigation measures identified in the Previous CEQA Documents, the proposed project would not result in any environmental effects that would cause substantial direct or indirect adverse effects to human beings and this impact would be less than significant.

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APPENDIX A

CALEEMOD OUTPUT SHEETS

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29212 Mission Boulevard Project
Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	189.00	Dwelling Unit	8.97	189,000.00	541
Strip Mall	2.77	1000sqft	0.00	2,773.00	0
Day-Care Center	8.05	1000sqft	0.00	8,048.00	0
Enclosed Parking Structure	312.00	Space	0.00	124,800.00	0
Parking Lot	96.00	Space	0.80	38,400.00	0
City Park	2.40	Acre	2.40	104,544.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	328.8	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

Project Characteristics - CO2 intensity factor based on 5-year average (PG&E, 2015).

Land Use - The project would include 189 townhome units, 8,048 square feet of ground floor commercial area which could be used as a daycare, 2,773-square-foot retail space, parking, and landscaping, open space, Planned Development amenities, and a multi-use trail easement.

Construction Phase - The construction period is anticipated to begin in March 2020 and would occur over an approximately 33-month period.

Grading - Approximately 10,000 cubic yards of soils would be exported from the project site.

Demolition - A total of 12,196 square feet of asphalt are anticipated to be removed from the project site during construction.

Vehicle Trips - Based on project trip generation (LSA 2019).

Construction Off-road Equipment Mitigation - BAAQMD Basic Construction Mitigation Measures

Mobile Land Use Mitigation -

Area Mitigation - Only natural gas hearth

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	300.00	500.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	PhaseEndDate	9/10/2021	12/30/2022
tblConstructionPhase	PhaseEndDate	7/16/2021	8/26/2022
tblConstructionPhase	PhaseEndDate	3/27/2020	4/10/2020
tblConstructionPhase	PhaseEndDate	5/22/2020	9/25/2020
tblConstructionPhase	PhaseEndDate	8/13/2021	10/28/2022
tblConstructionPhase	PhaseEndDate	4/10/2020	7/3/2020
tblConstructionPhase	PhaseStartDate	8/14/2021	10/31/2022
tblConstructionPhase	PhaseStartDate	5/23/2020	9/28/2020
tblConstructionPhase	PhaseStartDate	4/11/2020	7/6/2020

tblConstructionPhase	PhaseStartDate	7/17/2021	8/29/2022
tblConstructionPhase	PhaseStartDate	3/28/2020	4/13/2020
tblGrading	AcresOfGrading	150.00	12.17
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	LotAcreage	11.81	8.97
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.18	0.00
tblLandUse	LotAcreage	2.81	0.00
tblLandUse	LotAcreage	0.86	0.80
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	5.23
tblVehicleTrips	ST_TR	6.21	66.65
tblVehicleTrips	ST_TR	42.04	24.40
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	5.23
tblVehicleTrips	SU_TR	5.83	66.65
tblVehicleTrips	SU_TR	20.43	24.40
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	5.23
tblVehicleTrips	WD_TR	74.06	66.65
tblVehicleTrips	WD_TR	44.32	24.40

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.4263	4.4158	2.8640	6.4200e-003	0.8414	0.1970	1.0384	0.4275	0.1823	0.6098	0.0000	574.1458	574.1458	0.1265	0.0000	577.3090
2021	0.3767	3.2444	3.1281	8.2800e-003	0.3174	0.1288	0.4461	0.0857	0.1211	0.2068	0.0000	746.2065	746.2065	0.0889	0.0000	748.4279
2022	1.6788	2.2079	2.3711	6.0000e-003	0.2185	0.0857	0.3041	0.0590	0.0804	0.1394	0.0000	539.7794	539.7794	0.0721	0.0000	541.5809
Maximum	**1.6788**	**4.4158**	**3.1281**	**8.2800e-003**	**0.8414**	**0.1970**	**1.0384**	**0.4275**	**0.1823**	**0.6098**	**0.0000**	**746.2065**	**746.2065**	**0.1265**	**0.0000**	**748.4279**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.4263	4.4158	2.8640	6.4200e-003	0.4368	0.1970	0.6338	0.2081	0.1823	0.3904	0.0000	574.1453	574.1453	0.1265	0.0000	577.3086
2021	0.3767	3.2444	3.1281	8.2800e-003	0.3174	0.1288	0.4461	0.0857	0.1211	0.2068	0.0000	746.2062	746.2062	0.0889	0.0000	748.4275
2022	1.6788	2.2079	2.3711	6.0000e-003	0.2185	0.0857	0.3041	0.0590	0.0804	0.1394	0.0000	539.7791	539.7791	0.0721	0.0000	541.5806
Maximum	**1.6788**	**4.4158**	**3.1281**	**8.2800e-003**	**0.4368**	**0.1970**	**0.6338**	**0.2081**	**0.1823**	**0.3904**	**0.0000**	**746.2062**	**746.2062**	**0.1265**	**0.0000**	**748.4275**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**29.38**	**0.00**	**22.62**	**38.34**	**0.00**	**22.95**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**3-2-2020**	**6-1-2020**	1.3628	1.3628
2	**6-2-2020**	**9-1-2020**	1.7940	1.7940
3	**9-2-2020**	**12-1-2020**	1.2358	1.2358
4	**12-2-2020**	**3-1-2021**	0.9270	0.9270
5	**3-2-2021**	**6-1-2021**	0.9109	0.9109
6	**6-2-2021**	**9-1-2021**	0.9084	0.9084
7	**9-2-2021**	**12-1-2021**	0.9036	0.9036
8	**12-2-2021**	**3-1-2022**	0.8423	0.8423
9	**3-2-2022**	**6-1-2022**	0.8289	0.8289
10	**6-2-2022**	**9-1-2022**	0.7904	0.7904
11	**9-2-2022**	**9-30-2022**	0.1279	0.1279
		Highest	1.7940	1.7940

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4128	0.0263	2.0080	1.2700e-003		0.0936	0.0936		0.0936	0.0936	8.6165	5.8391	14.4555	0.0161	5.7000e-004	15.0257
Energy	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	495.0533	495.0533	0.0273	9.0500e-003	498.4341
Mobile	0.3392	1.4640	3.5742	0.0128	1.1235	0.0106	1.1340	0.3015	9.8700e-003	0.3114	0.0000	1,172.9509	1,172.9509	0.0425	0.0000	1,174.0129
Waste						0.0000	0.0000		0.0000	0.0000	20.4067	0.0000	20.4067	1.2060	0.0000	50.5567
Water						0.0000	0.0000		0.0000	0.0000	4.0813	16.4559	20.5372	0.4206	0.0102	34.0924
Total	**1.7759**	**1.6952**	**5.6724**	**0.0153**	**1.1235**	**0.1207**	**1.2442**	**0.3015**	**0.1200**	**0.4216**	**33.1045**	**1,690.2991**	**1,723.4036**	**1.7125**	**0.0198**	**1,772.1218**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9774	0.0227	1.4103	1.2000e-004		8.3100e-003	8.3100e-003		8.3100e-003	8.3100e-003	0.0000	9.8502	9.8502	2.3700e-003	1.4000e-004	9.9506
Energy	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	495.0533	495.0533	0.0273	9.0500e-003	498.4341
Mobile	0.3268	1.3883	3.2823	0.0114	0.9909	9.5100e-003	1.0004	0.2659	8.8800e-003	0.2748	0.0000	1,047.0252	1,047.0252	0.0391	0.0000	1,048.0015
Waste						0.0000	0.0000		0.0000	0.0000	20.4067	0.0000	20.4067	1.2060	0.0000	50.5567
Water						0.0000	0.0000		0.0000	0.0000	4.0813	16.4559	20.5372	0.4206	0.0102	34.0924
Total	**1.3282**	**1.6161**	**4.7827**	**0.0128**	**0.9909**	**0.0344**	**1.0253**	**0.2659**	**0.0337**	**0.2997**	**24.4880**	**1,568.3845**	**1,592.8725**	**1.6954**	**0.0194**	**1,641.0352**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**25.21**	**4.67**	**15.68**	**16.43**	**11.80**	**71.54**	**17.60**	**11.80**	**71.90**	**28.92**	**26.03**	**7.21**	**7.57**	**1.00**	**2.17**	**7.40**

3.0 Construction Detail

Construction Phase

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/2/2020	4/10/2020	5	30	
2	Site Preparation	Site Preparation	4/13/2020	7/3/2020	5	60	
3	Grading	Grading	7/6/2020	9/25/2020	5	60	
4	Building Construction	Building Construction	9/28/2020	8/26/2022	5	500	
5	Paving	Paving	8/29/2022	10/28/2022	5	45	
6	Architectural Coating	Architectural Coating	10/31/2022	12/30/2022	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.17

Acres of Paving: 0.8

Residential Indoor: 382,725; Residential Outdoor: 127,575; Non-Residential Indoor: 16,232; Non-Residential Outdoor: 5,411; Striped Parking Area: 9,792 (Architectural Coating – sqft)

OffRoad Equipment

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	55.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	253.00	66.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0000e-003	0.0000	6.0000e-003	9.1000e-004	0.0000	9.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0497	0.4980	0.3263	5.8000e-004		0.0249	0.0249		0.0231	0.0231	0.0000	50.9979	50.9979	0.0144	0.0000	51.3578
Total	**0.0497**	**0.4980**	**0.3263**	**5.8000e-004**	**6.0000e-003**	**0.0249**	**0.0309**	**9.1000e-004**	**0.0231**	**0.0240**	**0.0000**	**50.9979**	**50.9979**	**0.0144**	**0.0000**	**51.3578**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0400e-003	1.6200e-003	2.0000e-005	4.6000e-004	3.0000e-005	4.9000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	2.1075	2.1075	1.1000e-004	0.0000	2.1102
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.3000e-004	5.5300e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.5576	1.5576	4.0000e-005	0.0000	1.5586
Total	**9.8000e-004**	**8.5700e-003**	**7.1500e-003**	**4.0000e-005**	**2.2400e-003**	**4.0000e-005**	**2.2800e-003**	**6.0000e-004**	**3.0000e-005**	**6.3000e-004**	**0.0000**	**3.6652**	**3.6652**	**1.5000e-004**	**0.0000**	**3.6688**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-003	0.0000	2.7000e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0497	0.4980	0.3263	5.8000e-004		0.0249	0.0249		0.0231	0.0231	0.0000	50.9979	50.9979	0.0144	0.0000	51.3578
Total	**0.0497**	**0.4980**	**0.3263**	**5.8000e-004**	**2.7000e-003**	**0.0249**	**0.0276**	**4.1000e-004**	**0.0231**	**0.0235**	**0.0000**	**50.9979**	**50.9979**	**0.0144**	**0.0000**	**51.3578**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0400e-003	1.6200e-003	2.0000e-005	4.6000e-004	3.0000e-005	4.9000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	2.1075	2.1075	1.1000e-004	0.0000	2.1102
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.3000e-004	5.5300e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.5576	1.5576	4.0000e-005	0.0000	1.5586
Total	**9.8000e-004**	**8.5700e-003**	**7.1500e-003**	**4.0000e-005**	**2.2400e-003**	**4.0000e-005**	**2.2800e-003**	**6.0000e-004**	**3.0000e-005**	**6.3000e-004**	**0.0000**	**3.6652**	**3.6652**	**1.5000e-004**	**0.0000**	**3.6688**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5420	0.0000	0.5420	0.2979	0.0000	0.2979	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1223	1.2725	0.6454	1.1400e-003		0.0659	0.0659		0.0607	0.0607	0.0000	100.2920	100.2920	0.0324	0.0000	101.1030
Total	**0.1223**	**1.2725**	**0.6454**	**1.1400e-003**	**0.5420**	**0.0659**	**0.6079**	**0.2979**	**0.0607**	**0.3586**	**0.0000**	**100.2920**	**100.2920**	**0.0324**	**0.0000**	**101.1030**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7900e-003	1.2800e-003	0.0133	4.0000e-005	4.2700e-003	3.0000e-005	4.3000e-003	1.1400e-003	3.0000e-005	1.1600e-003	0.0000	3.7383	3.7383	9.0000e-005	0.0000	3.7406
Total	**1.7900e-003**	**1.2800e-003**	**0.0133**	**4.0000e-005**	**4.2700e-003**	**3.0000e-005**	**4.3000e-003**	**1.1400e-003**	**3.0000e-005**	**1.1600e-003**	**0.0000**	**3.7383**	**3.7383**	**9.0000e-005**	**0.0000**	**3.7406**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2439	0.0000	0.2439	0.1341	0.0000	0.1341	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1223	1.2725	0.6454	1.1400e-003		0.0659	0.0659		0.0607	0.0607	0.0000	100.2919	100.2919	0.0324	0.0000	101.1028
Total	**0.1223**	**1.2725**	**0.6454**	**1.1400e-003**	**0.2439**	**0.0659**	**0.3098**	**0.1341**	**0.0607**	**0.1947**	**0.0000**	**100.2919**	**100.2919**	**0.0324**	**0.0000**	**101.1028**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7900e-003	1.2800e-003	0.0133	4.0000e-005	4.2700e-003	3.0000e-005	4.3000e-003	1.1400e-003	3.0000e-005	1.1600e-003	0.0000	3.7383	3.7383	9.0000e-005	0.0000	3.7406
Total	**1.7900e-003**	**1.2800e-003**	**0.0133**	**4.0000e-005**	**4.2700e-003**	**3.0000e-005**	**4.3000e-003**	**1.1400e-003**	**3.0000e-005**	**1.1600e-003**	**0.0000**	**3.7383**	**3.7383**	**9.0000e-005**	**0.0000**	**3.7406**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1877	0.0000	0.1877	0.1001	0.0000	0.1001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1335	1.5059	0.9588	1.8600e-003		0.0652	0.0652		0.0600	0.0600	0.0000	163.4529	163.4529	0.0529	0.0000	164.7745
Total	**0.1335**	**1.5059**	**0.9588**	**1.8600e-003**	**0.1877**	**0.0652**	**0.2529**	**0.1001**	**0.0600**	**0.1601**	**0.0000**	**163.4529**	**163.4529**	**0.0529**	**0.0000**	**164.7745**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2200e-003	0.1827	0.0367	4.9000e-004	0.0106	5.9000e-004	0.0112	2.9000e-003	5.6000e-004	3.4700e-003	0.0000	47.8983	47.8983	2.4700e-003	0.0000	47.9600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9900e-003	1.4200e-003	0.0147	5.0000e-005	4.7400e-003	3.0000e-005	4.7700e-003	1.2600e-003	3.0000e-005	1.2900e-003	0.0000	4.1537	4.1537	1.0000e-004	0.0000	4.1562
Total	**7.2100e-003**	**0.1842**	**0.0515**	**5.4000e-004**	**0.0153**	**6.2000e-004**	**0.0159**	**4.1600e-003**	**5.9000e-004**	**4.7600e-003**	**0.0000**	**52.0520**	**52.0520**	**2.5700e-003**	**0.0000**	**52.1162**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0845	0.0000	0.0845	0.0450	0.0000	0.0450	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1335	1.5059	0.9588	1.8600e-003		0.0652	0.0652		0.0600	0.0600	0.0000	163.4527	163.4527	0.0529	0.0000	164.7743
Total	**0.1335**	**1.5059**	**0.9588**	**1.8600e-003**	**0.0845**	**0.0652**	**0.1497**	**0.0450**	**0.0600**	**0.1050**	**0.0000**	**163.4527**	**163.4527**	**0.0529**	**0.0000**	**164.7743**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2200e-003	0.1827	0.0367	4.9000e-004	0.0106	5.9000e-004	0.0112	2.9000e-003	5.6000e-004	3.4700e-003	0.0000	47.8983	47.8983	2.4700e-003	0.0000	47.9600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9900e-003	1.4200e-003	0.0147	5.0000e-005	4.7400e-003	3.0000e-005	4.7700e-003	1.2600e-003	3.0000e-005	1.2900e-003	0.0000	4.1537	4.1537	1.0000e-004	0.0000	4.1562
Total	**7.2100e-003**	**0.1842**	**0.0515**	**5.4000e-004**	**0.0153**	**6.2000e-004**	**0.0159**	**4.1600e-003**	**5.9000e-004**	**4.7600e-003**	**0.0000**	**52.0520**	**52.0520**	**2.5700e-003**	**0.0000**	**52.1162**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0731	0.6619	0.5813	9.3000e-004		0.0385	0.0385		0.0362	0.0362	0.0000	79.9054	79.9054	0.0195	0.0000	80.3928
Total	**0.0731**	**0.6619**	**0.5813**	**9.3000e-004**		**0.0385**	**0.0385**		**0.0362**	**0.0362**	**0.0000**	**79.9054**	**79.9054**	**0.0195**	**0.0000**	**80.3928**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8100e-003	0.2627	0.0661	6.2000e-004	0.0149	1.2800e-003	0.0162	4.3200e-003	1.2300e-003	5.5400e-003	0.0000	59.6163	59.6163	3.0700e-003	0.0000	59.6932
Worker	0.0289	0.0207	0.2144	6.7000e-004	0.0690	4.6000e-004	0.0694	0.0184	4.3000e-004	0.0188	0.0000	60.4257	60.4257	1.4600e-003	0.0000	60.4623
Total	**0.0377**	**0.2834**	**0.2804**	**1.2900e-003**	**0.0839**	**1.7400e-003**	**0.0857**	**0.0227**	**1.6600e-003**	**0.0243**	**0.0000**	**120.0420**	**120.0420**	**4.5300e-003**	**0.0000**	**120.1554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0731	0.6619	0.5813	9.3000e-004		0.0385	0.0385		0.0362	0.0362	0.0000	79.9054	79.9054	0.0195	0.0000	80.3927
Total	**0.0731**	**0.6619**	**0.5813**	**9.3000e-004**		**0.0385**	**0.0385**		**0.0362**	**0.0362**	**0.0000**	**79.9054**	**79.9054**	**0.0195**	**0.0000**	**80.3927**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8100e-003	0.2627	0.0661	6.2000e-004	0.0149	1.2800e-003	0.0162	4.3200e-003	1.2300e-003	5.5400e-003	0.0000	59.6163	59.6163	3.0700e-003	0.0000	59.6932
Worker	0.0289	0.0207	0.2144	6.7000e-004	0.0690	4.6000e-004	0.0694	0.0184	4.3000e-004	0.0188	0.0000	60.4257	60.4257	1.4600e-003	0.0000	60.4623
Total	**0.0377**	**0.2834**	**0.2804**	**1.2900e-003**	**0.0839**	**1.7400e-003**	**0.0857**	**0.0227**	**1.6600e-003**	**0.0243**	**0.0000**	**120.0420**	**120.0420**	**4.5300e-003**	**0.0000**	**120.1554**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0273	0.8996	0.2246	2.3200e-003	0.0565	1.9600e-003	0.0584	0.0163	1.8700e-003	0.0182	0.0000	223.3729	223.3729	0.0110	0.0000	223.6475
Worker	0.1013	0.0699	0.7405	2.4400e-003	0.2609	1.7100e-003	0.2626	0.0694	1.5700e-003	0.0710	0.0000	220.5469	220.5469	4.9500e-003	0.0000	220.6706
Total	**0.1287**	**0.9695**	**0.9651**	**4.7600e-003**	**0.3174**	**3.6700e-003**	**0.3210**	**0.0857**	**3.4400e-003**	**0.0892**	**0.0000**	**443.9199**	**443.9199**	**0.0159**	**0.0000**	**444.3180**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0273	0.8996	0.2246	2.3200e-003	0.0565	1.9600e-003	0.0584	0.0163	1.8700e-003	0.0182	0.0000	223.3729	223.3729	0.0110	0.0000	223.6475
Worker	0.1013	0.0699	0.7405	2.4400e-003	0.2609	1.7100e-003	0.2626	0.0694	1.5700e-003	0.0710	0.0000	220.5469	220.5469	4.9500e-003	0.0000	220.6706
Total	**0.1287**	**0.9695**	**0.9651**	**4.7600e-003**	**0.3174**	**3.6700e-003**	**0.3210**	**0.0857**	**3.4400e-003**	**0.0892**	**0.0000**	**443.9199**	**443.9199**	**0.0159**	**0.0000**	**444.3180**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1450	1.3273	1.3909	2.2900e-003		0.0688	0.0688		0.0647	0.0647	0.0000	196.9665	196.9665	0.0472	0.0000	198.1462
Total	**0.1450**	**1.3273**	**1.3909**	**2.2900e-003**		**0.0688**	**0.0688**		**0.0647**	**0.0647**	**0.0000**	**196.9665**	**196.9665**	**0.0472**	**0.0000**	**198.1462**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0166	0.5549	0.1375	1.5000e-003	0.0368	1.1100e-003	0.0379	0.0106	1.0600e-003	0.0117	0.0000	144.0653	144.0653	6.8400e-003	0.0000	144.2362
Worker	0.0615	0.0408	0.4433	1.5300e-003	0.1699	1.0900e-003	0.1710	0.0452	1.0000e-003	0.0462	0.0000	138.3848	138.3848	2.8900e-003	0.0000	138.4570
Total	**0.0781**	**0.5958**	**0.5808**	**3.0300e-003**	**0.2067**	**2.2000e-003**	**0.2089**	**0.0559**	**2.0600e-003**	**0.0579**	**0.0000**	**282.4501**	**282.4501**	**9.7300e-003**	**0.0000**	**282.6932**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1450	1.3273	1.3909	2.2900e-003		0.0688	0.0688		0.0647	0.0647	0.0000	196.9662	196.9662	0.0472	0.0000	198.1459
Total	**0.1450**	**1.3273**	**1.3909**	**2.2900e-003**		**0.0688**	**0.0688**		**0.0647**	**0.0647**	**0.0000**	**196.9662**	**196.9662**	**0.0472**	**0.0000**	**198.1459**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0166	0.5549	0.1375	1.5000e-003	0.0368	1.1100e-003	0.0379	0.0106	1.0600e-003	0.0117	0.0000	144.0653	144.0653	6.8400e-003	0.0000	144.2362
Worker	0.0615	0.0408	0.4433	1.5300e-003	0.1699	1.0900e-003	0.1710	0.0452	1.0000e-003	0.0462	0.0000	138.3848	138.3848	2.8900e-003	0.0000	138.4570
Total	**0.0781**	**0.5958**	**0.5808**	**3.0300e-003**	**0.2067**	**2.2000e-003**	**0.2089**	**0.0559**	**2.0600e-003**	**0.0579**	**0.0000**	**282.4501**	**282.4501**	**9.7300e-003**	**0.0000**	**282.6932**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0248	0.2503	0.3281	5.1000e-004		0.0128	0.0128		0.0118	0.0118	0.0000	45.0620	45.0620	0.0146	0.0000	45.4264
Paving	1.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0259**	**0.2503**	**0.3281**	**5.1000e-004**		**0.0128**	**0.0128**		**0.0118**	**0.0118**	**0.0000**	**45.0620**	**45.0620**	**0.0146**	**0.0000**	**45.4264**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	6.4000e-004	6.9600e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.1718	2.1718	5.0000e-005	0.0000	2.1730
Total	**9.7000e-004**	**6.4000e-004**	**6.9600e-003**	**2.0000e-005**	**2.6700e-003**	**2.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.3000e-004**	**0.0000**	**2.1718**	**2.1718**	**5.0000e-005**	**0.0000**	**2.1730**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0248	0.2503	0.3281	5.1000e-004		0.0128	0.0128		0.0118	0.0118	0.0000	45.0620	45.0620	0.0146	0.0000	45.4263
Paving	1.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0259**	**0.2503**	**0.3281**	**5.1000e-004**		**0.0128**	**0.0128**		**0.0118**	**0.0118**	**0.0000**	**45.0620**	**45.0620**	**0.0146**	**0.0000**	**45.4263**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	6.4000e-004	6.9600e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.1718	2.1718	5.0000e-005	0.0000	2.1730
Total	**9.7000e-004**	**6.4000e-004**	**6.9600e-003**	**2.0000e-005**	**2.6700e-003**	**2.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.3000e-004**	**0.0000**	**2.1718**	**2.1718**	**5.0000e-005**	**0.0000**	**2.1730**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6000e-003	0.0317	0.0408	7.0000e-005		1.8400e-003	1.8400e-003		1.8400e-003	1.8400e-003	0.0000	5.7448	5.7448	3.7000e-004	0.0000	5.7542
Total	**1.4255**	**0.0317**	**0.0408**	**7.0000e-005**		**1.8400e-003**	**1.8400e-003**		**1.8400e-003**	**1.8400e-003**	**0.0000**	**5.7448**	**5.7448**	**3.7000e-004**	**0.0000**	**5.7542**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2800e-003	2.1800e-003	0.0237	8.0000e-005	9.0700e-003	6.0000e-005	9.1300e-003	2.4100e-003	5.0000e-005	2.4700e-003	0.0000	7.3842	7.3842	1.5000e-004	0.0000	7.3880
Total	**3.2800e-003**	**2.1800e-003**	**0.0237**	**8.0000e-005**	**9.0700e-003**	**6.0000e-005**	**9.1300e-003**	**2.4100e-003**	**5.0000e-005**	**2.4700e-003**	**0.0000**	**7.3842**	**7.3842**	**1.5000e-004**	**0.0000**	**7.3880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6000e-003	0.0317	0.0408	7.0000e-005		1.8400e-003	1.8400e-003		1.8400e-003	1.8400e-003	0.0000	5.7448	5.7448	3.7000e-004	0.0000	5.7542
Total	**1.4255**	**0.0317**	**0.0408**	**7.0000e-005**		**1.8400e-003**	**1.8400e-003**		**1.8400e-003**	**1.8400e-003**	**0.0000**	**5.7448**	**5.7448**	**3.7000e-004**	**0.0000**	**5.7542**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2800e-003	2.1800e-003	0.0237	8.0000e-005	9.0700e-003	6.0000e-005	9.1300e-003	2.4100e-003	5.0000e-005	2.4700e-003	0.0000	7.3842	7.3842	1.5000e-004	0.0000	7.3880
Total	**3.2800e-003**	**2.1800e-003**	**0.0237**	**8.0000e-005**	**9.0700e-003**	**6.0000e-005**	**9.1300e-003**	**2.4100e-003**	**5.0000e-005**	**2.4700e-003**	**0.0000**	**7.3842**	**7.3842**	**1.5000e-004**	**0.0000**	**7.3880**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3268	1.3883	3.2823	0.0114	0.9909	9.5100e-003	1.0004	0.2659	8.8800e-003	0.2748	0.0000	1,047.0252	1,047.0252	0.0391	0.0000	1,048.0015
Unmitigated	0.3392	1.4640	3.5742	0.0128	1.1235	0.0106	1.1340	0.3015	9.8700e-003	0.3114	0.0000	1,172.9509	1,172.9509	0.0425	0.0000	1,174.0129

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	988.47	988.47	988.47	2,282,978	2,013,586
Day-Care Center	536.40	536.40	536.40	631,679	557,141
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	67.66	67.66	67.66	104,200	91,905
Total	1,592.53	1,592.53	1,592.53	3,018,857	2,662,632

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Condo/Townhouse	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Day-Care Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Enclosed Parking Structure	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Parking Lot	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Strip Mall	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	258.1588	258.1588	0.0228	4.7100e-003	260.1319
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	258.1588	258.1588	0.0228	4.7100e-003	260.1319
NaturalGas Mitigated	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	236.8945	236.8945	4.5400e-003	4.3400e-003	238.3022
NaturalGas Unmitigated	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	236.8945	236.8945	4.5400e-003	4.3400e-003	238.3022

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	4.29393e+006	0.0232	0.1979	0.0842	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	229.1404	229.1404	4.3900e-003	4.2000e-003	230.5021
Day-Care Center	132551	7.1000e-004	6.5000e-003	5.4600e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0734	7.0734	1.4000e-004	1.3000e-004	7.1154
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	12755.8	7.0000e-005	6.3000e-004	5.3000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6807	0.6807	1.0000e-005	1.0000e-005	0.6847
Total		**0.0239**	**0.2050**	**0.0902**	**1.3000e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**	**0.0000**	**236.8945**	**236.8945**	**4.5400e-003**	**4.3400e-003**	**238.3022**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	4.29393e+006	0.0232	0.1979	0.0842	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	229.1404	229.1404	4.3900e-003	4.2000e-003	230.5021
Day-Care Center	132551	7.1000e-004	6.5000e-003	5.4600e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0734	7.0734	1.4000e-004	1.3000e-004	7.1154
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	12755.8	7.0000e-005	6.3000e-004	5.3000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6807	0.6807	1.0000e-005	1.0000e-005	0.6847
Total		**0.0239**	**0.2050**	**0.0902**	**1.3000e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**	**0.0000**	**236.8945**	**236.8945**	**4.5400e-003**	**4.3400e-003**	**238.3022**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	945119	140.9562	0.0124	2.5700e-003	142.0335
Day-Care Center	35733.1	5.3293	4.7000e-004	1.0000e-004	5.3700
Enclosed Parking Structure	707616	105.5347	9.3100e-003	1.9300e-003	106.3413
Parking Lot	13440	2.0045	1.8000e-004	4.0000e-005	2.0198
Strip Mall	29061	4.3342	3.8000e-004	8.0000e-005	4.3673
Total		**258.1588**	**0.0228**	**4.7200e-003**	**260.1319**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	945119	140.9562	0.0124	2.5700e-003	142.0335
Day-Care Center	35733.1	5.3293	4.7000e-004	1.0000e-004	5.3700
Enclosed Parking Structure	707616	105.5347	9.3100e-003	1.9300e-003	106.3413
Parking Lot	13440	2.0045	1.8000e-004	4.0000e-005	2.0198
Strip Mall	29061	4.3342	3.8000e-004	8.0000e-005	4.3673
Total		**258.1588**	**0.0228**	**4.7200e-003**	**260.1319**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9774	0.0227	1.4103	1.2000e-004		8.3100e-003	8.3100e-003		8.3100e-003	8.3100e-003	0.0000	9.8502	9.8502	2.3700e-003	1.4000e-004	9.9506
Unmitigated	1.4128	0.0263	2.0080	1.2700e-003		0.0936	0.0936		0.0936	0.0936	8.6165	5.8391	14.4555	0.0161	5.7000e-004	15.0257

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1421					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4361	0.0100	0.6005	1.1900e-003		0.0859	0.0859		0.0859	0.0859	8.6165	3.5392	12.1557	0.0139	5.7000e-004	12.6702
Landscaping	0.0427	0.0162	1.4075	7.0000e-005		7.7800e-003	7.7800e-003		7.7800e-003	7.7800e-003	0.0000	2.2999	2.2999	2.2200e-003	0.0000	2.3555
Total	**1.4128**	**0.0263**	**2.0080**	**1.2600e-003**		**0.0936**	**0.0936**		**0.0936**	**0.0936**	**8.6165**	**5.8391**	**14.4555**	**0.0161**	**5.7000e-004**	**15.0257**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1421					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.6000e-004	6.5200e-003	2.7700e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.5503	7.5503	1.4000e-004	1.4000e-004	7.5952
Landscaping	0.0427	0.0162	1.4075	7.0000e-005		7.7800e-003	7.7800e-003		7.7800e-003	7.7800e-003	0.0000	2.2999	2.2999	2.2200e-003	0.0000	2.3555
Total	**0.9774**	**0.0227**	**1.4103**	**1.1000e-004**		**8.3100e-003**	**8.3100e-003**		**8.3100e-003**	**8.3100e-003**	**0.0000**	**9.8502**	**9.8502**	**2.3600e-003**	**1.4000e-004**	**9.9506**

7.0 Water Detail

7.1 Mitigation Measures Water

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	20.5372	0.4206	0.0102	34.0924
Unmitigated	20.5372	0.4206	0.0102	34.0924

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.85956	1.4927	1.3000e-004	3.0000e-005	1.5041
Condo/Townhouse	12.3141 / 7.76324	17.8966	0.4025	9.7300e-003	30.8583
Day-Care Center	0.345261 / 0.887814	0.8516	0.0113	2.8000e-004	1.2177
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.205181 / 0.125756	0.2963	6.7100e-003	1.6000e-004	0.5123
Total		**20.5372**	**0.4207**	**0.0102**	**34.0924**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.85956	1.4927	1.3000e-004	3.0000e-005	1.5041
Condo/Townhouse	12.3141 / 7.76324	17.8966	0.4025	9.7300e-003	30.8583
Day-Care Center	0.345261 / 0.887814	0.8516	0.0113	2.8000e-004	1.2177
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.205181 / 0.125756	0.2963	6.7100e-003	1.6000e-004	0.5123
Total		**20.5372**	**0.4207**	**0.0102**	**34.0924**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.4067	1.2060	0.0000	50.5567
Unmitigated	20.4067	1.2060	0.0000	50.5567

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.21	0.0426	2.5200e-003	0.0000	0.1056
Condo/Townhouse	86.94	17.6480	1.0430	0.0000	43.7223
Day-Care Center	10.47	2.1253	0.1256	0.0000	5.2654
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	2.91	0.5907	0.0349	0.0000	1.4634
Total		**20.4067**	**1.2060**	**0.0000**	**50.5567**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.21	0.0426	2.5200e-003	0.0000	0.1056
Condo/Townhouse	86.94	17.6480	1.0430	0.0000	43.7223
Day-Care Center	10.47	2.1253	0.1256	0.0000	5.2654
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	2.91	0.5907	0.0349	0.0000	1.4634
Total		**20.4067**	**1.2060**	**0.0000**	**50.5567**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

29212 Mission Boulevard Project
Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	189.00	Dwelling Unit	8.97	189,000.00	541
Strip Mall	2.77	1000sqft	0.00	2,773.00	0
Day-Care Center	8.05	1000sqft	0.00	8,048.00	0
Enclosed Parking Structure	312.00	Space	0.00	124,800.00	0
Parking Lot	96.00	Space	0.80	38,400.00	0
City Park	2.40	Acre	2.40	104,544.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	328.8	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

29212 Mission Boulevard Project - Bay Area AQMD Air District, Summer

Project Characteristics - CO2 intensity factor based on 5-year average (PG&E, 2015).

Land Use - The project would include 189 townhome units, 8,048 square feet of ground floor commercial area which could be used as a daycare, 2,773-square-foot retail space, parking, and landscaping, open space, Planned Development amenities, and a multi-use trail easement.

Construction Phase - The construction period is anticipated to begin in March 2020 and would occur over an approximately 33-month period.

Grading - Approximately 10,000 cubic yards of soils would be exported from the project site.

Demolition - A total of 12,196 square feet of asphalt are anticipated to be removed from the project site during construction.

Vehicle Trips - Based on project trip generation (LSA 2019).

Construction Off-road Equipment Mitigation - BAAQMD Basic Construction Mitigation Measures

Mobile Land Use Mitigation -

Area Mitigation - Only natural gas hearth

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	300.00	500.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	PhaseEndDate	9/10/2021	12/30/2022
tblConstructionPhase	PhaseEndDate	7/16/2021	8/26/2022
tblConstructionPhase	PhaseEndDate	3/27/2020	4/10/2020
tblConstructionPhase	PhaseEndDate	5/22/2020	9/25/2020
tblConstructionPhase	PhaseEndDate	8/13/2021	10/28/2022
tblConstructionPhase	PhaseEndDate	4/10/2020	7/3/2020
tblConstructionPhase	PhaseStartDate	8/14/2021	10/31/2022
tblConstructionPhase	PhaseStartDate	5/23/2020	9/28/2020
tblConstructionPhase	PhaseStartDate	4/11/2020	7/6/2020

tblConstructionPhase	PhaseStartDate	7/17/2021	8/29/2022
tblConstructionPhase	PhaseStartDate	3/28/2020	4/13/2020
tblGrading	AcresOfGrading	150.00	12.17
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	LotAcreage	11.81	8.97
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.18	0.00
tblLandUse	LotAcreage	2.81	0.00
tblLandUse	LotAcreage	0.86	0.80
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	5.23
tblVehicleTrips	ST_TR	6.21	66.65
tblVehicleTrips	ST_TR	42.04	24.40
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	5.23
tblVehicleTrips	SU_TR	5.83	66.65
tblVehicleTrips	SU_TR	20.43	24.40
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	5.23
tblVehicleTrips	WD_TR	74.06	66.65
tblVehicleTrips	WD_TR	44.32	24.40

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.6915	56.2072	33.6809	0.0802	18.2141	2.1984	20.4125	9.9699	2.0225	11.9924	0.0000	7,942.4863	7,942.4863	2.0351	0.0000	7,993.3624
2021	2.9191	24.7280	24.3980	0.0650	2.5251	0.9865	3.5116	0.6799	0.9275	1.6073	0.0000	6,464.1479	6,464.1479	0.7503	0.0000	6,482.9057
2022	63.5089	22.5061	23.6023	0.0641	2.5251	0.8346	3.3597	0.6799	0.7852	1.4651	0.0000	6,373.0126	6,373.0126	0.7378	0.0000	6,391.4563
Maximum	**63.5089**	**56.2072**	**33.6809**	**0.0802**	**18.2141**	**2.1984**	**20.4125**	**9.9699**	**2.0225**	**11.9924**	**0.0000**	**7,942.4863**	**7,942.4863**	**2.0351**	**0.0000**	**7,993.3624**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.6915	56.2072	33.6809	0.0802	8.2777	2.1984	10.4761	4.5080	2.0225	6.5305	0.0000	7,942.4863	7,942.4863	2.0351	0.0000	7,993.3624
2021	2.9191	24.7280	24.3980	0.0650	2.5251	0.9865	3.5116	0.6799	0.9275	1.6073	0.0000	6,464.1479	6,464.1479	0.7503	0.0000	6,482.9057
2022	63.5089	22.5061	23.6023	0.0641	2.5251	0.8346	3.3597	0.6799	0.7852	1.4651	0.0000	6,373.0126	6,373.0126	0.7378	0.0000	6,391.4563
Maximum	**63.5089**	**56.2072**	**33.6809**	**0.0802**	**8.2777**	**2.1984**	**10.4761**	**4.5080**	**2.0225**	**6.5305**	**0.0000**	**7,942.4863**	**7,942.4863**	**2.0351**	**0.0000**	**7,993.3624**

29212 Mission Boulevard Project - Bay Area AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	42.71	0.00	36.42	48.21	0.00	36.26	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	83.3199	1.8985	118.3335	0.1987		14.6654	14.6654		14.6654	14.6654	1,582.0899	728.5803	2,310.6703	2.1923	0.1118	2,398.8008
Energy	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603
Mobile	2.1607	7.8237	20.1930	0.0742	6.4132	0.0580	6.4712	1.7157	0.0541	1.7698		7,511.9553	7,511.9553	0.2574		7,518.3911
Total	**85.6118**	**10.8454**	**139.0207**	**0.2800**	**6.4132**	**14.8141**	**21.2272**	**1.7157**	**14.8102**	**16.5259**	**1,582.0899**	**9,671.3931**	**11,253.4830**	**2.4771**	**0.1381**	**11,356.5521**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7288	1.3506	16.1373	8.3000e-003		0.1811	0.1811		0.1811	0.1811	0.0000	1,522.3803	1,522.3803	0.0559	0.0274	1,531.9407
Energy	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603
Mobile	2.0909	7.4342	18.3832	0.0662	5.6564	0.0522	5.7086	1.5132	0.0487	1.5619		6,704.1628	6,704.1628	0.2358		6,710.0565
Total	**7.9508**	**9.9080**	**35.0147**	**0.0816**	**5.6564**	**0.3239**	**5.9803**	**1.5132**	**0.3204**	**1.8337**	**0.0000**	**9,657.4006**	**9,657.4006**	**0.3191**	**0.0536**	**9,681.3575**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**90.71**	**8.64**	**74.81**	**70.84**	**11.80**	**97.81**	**71.83**	**11.80**	**97.84**	**88.90**	**100.00**	**0.14**	**14.18**	**87.12**	**61.16**	**14.75**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/2/2020	4/10/2020	5	30	
2	Site Preparation	Site Preparation	4/13/2020	7/3/2020	5	60	
3	Grading	Grading	7/6/2020	9/25/2020	5	60	
4	Building Construction	Building Construction	9/28/2020	8/26/2022	5	500	
5	Paving	Paving	8/29/2022	10/28/2022	5	45	
6	Architectural Coating	Architectural Coating	10/31/2022	12/30/2022	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.17

Acres of Paving: 0.8

Residential Indoor: 382,725; Residential Outdoor: 127,575; Non-Residential Indoor: 16,232; Non-Residential Outdoor: 5,411; Striped Parking Area: 9,792 (Architectural Coating – sqft)

OffRoad Equipment

29212 Mission Boulevard Project - Bay Area AQMD Air District, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	55.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	253.00	66.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4002	0.0000	0.4002	0.0606	0.0000	0.0606			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419		3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.4002**	**1.6587**	**2.0589**	**0.0606**	**1.5419**	**1.6024**		**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0151	0.5252	0.1044	1.4600e-003	0.0320	1.7200e-003	0.0337	8.7800e-003	1.6400e-003	0.0104		155.9770	155.9770	7.8000e-003		156.1721
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0521	0.0316	0.4025	1.2400e-003	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		123.1165	123.1165	2.9700e-003		123.1907
Total	**0.0673**	**0.5567**	**0.5068**	**2.7000e-003**	**0.1553**	**2.5200e-003**	**0.1578**	**0.0415**	**2.3800e-003**	**0.0438**		**279.0935**	**279.0935**	**0.0108**		**279.3627**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1801	0.0000	0.1801	0.0273	0.0000	0.0273			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419	0.0000	3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.1801**	**1.6587**	**1.8388**	**0.0273**	**1.5419**	**1.5691**	**0.0000**	**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0151	0.5252	0.1044	1.4600e-003	0.0320	1.7200e-003	0.0337	8.7800e-003	1.6400e-003	0.0104		155.9770	155.9770	7.8000e-003		156.1721
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0521	0.0316	0.4025	1.2400e-003	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		123.1165	123.1165	2.9700e-003		123.1907
Total	**0.0673**	**0.5567**	**0.5068**	**2.7000e-003**	**0.1553**	**2.5200e-003**	**0.1578**	**0.0415**	**2.3800e-003**	**0.0438**		**279.0935**	**279.0935**	**0.0108**		**279.3627**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0626	0.0379	0.4830	1.4800e-003	0.1479	9.6000e-004	0.1488	0.0392	8.8000e-004	0.0401		147.7398	147.7398	3.5600e-003		147.8288
Total	**0.0626**	**0.0379**	**0.4830**	**1.4800e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**147.7398**	**147.7398**	**3.5600e-003**		**147.8288**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**8.1298**	**2.1974**	**10.3272**	**4.4688**	**2.0216**	**6.4904**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0626	0.0379	0.4830	1.4800e-003	0.1479	9.6000e-004	0.1488	0.0392	8.8000e-004	0.0401		147.7398	147.7398	3.5600e-003		147.8288
Total	**0.0626**	**0.0379**	**0.4830**	**1.4800e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**147.7398**	**147.7398**	**3.5600e-003**		**147.8288**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2560	0.0000	6.2560	3.3363	0.0000	3.3363			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.2560**	**2.1739**	**8.4299**	**3.3363**	**2.0000**	**5.3363**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1719	5.9676	1.1860	0.0166	0.3640	0.0195	0.3835	0.0997	0.0187	0.1184		1,772.4657	1,772.4657	0.0887		1,774.6824
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0421	0.5366	1.6500e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		164.1553	164.1553	3.9600e-003		164.2542
Total	**0.2414**	**6.0097**	**1.7226**	**0.0182**	**0.5283**	**0.0206**	**0.5488**	**0.1433**	**0.0196**	**0.1630**		**1,936.6210**	**1,936.6210**	**0.0926**		**1,938.9366**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8152	0.0000	2.8152	1.5013	0.0000	1.5013			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**2.8152**	**2.1739**	**4.9891**	**1.5013**	**2.0000**	**3.5013**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1719	5.9676	1.1860	0.0166	0.3640	0.0195	0.3835	0.0997	0.0187	0.1184		1,772.4657	1,772.4657	0.0887		1,774.6824
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0695	0.0421	0.5366	1.6500e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		164.1553	164.1553	3.9600e-003		164.2542
Total	**0.2414**	**6.0097**	**1.7226**	**0.0182**	**0.5283**	**0.0206**	**0.5488**	**0.1433**	**0.0196**	**0.1630**		**1,936.6210**	**1,936.6210**	**0.0926**		**1,938.9366**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2502	7.5215	1.7942	0.0182	0.4468	0.0369	0.4836	0.1286	0.0353	0.1639		1,925.2731	1,925.2731	0.0948		1,927.6434
Worker	0.8794	0.5324	6.7881	0.0208	2.0783	0.0135	2.0918	0.5513	0.0124	0.5637		2,076.5647	2,076.5647	0.0500		2,077.8156
Total	**1.1296**	**8.0539**	**8.5823**	**0.0390**	**2.5251**	**0.0503**	**2.5754**	**0.6799**	**0.0477**	**0.7275**		**4,001.8378**	**4,001.8378**	**0.1449**		**4,005.4590**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2502	7.5215	1.7942	0.0182	0.4468	0.0369	0.4836	0.1286	0.0353	0.1639		1,925.2731	1,925.2731	0.0948		1,927.6434
Worker	0.8794	0.5324	6.7881	0.0208	2.0783	0.0135	2.0918	0.5513	0.0124	0.5637		2,076.5647	2,076.5647	0.0500		2,077.8156
Total	**1.1296**	**8.0539**	**8.5823**	**0.0390**	**2.5251**	**0.0503**	**2.5754**	**0.6799**	**0.0477**	**0.7275**		**4,001.8378**	**4,001.8378**	**0.1449**		**4,005.4590**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2047	6.8205	1.6083	0.0180	0.4468	0.0148	0.4615	0.1286	0.0141	0.1427		1,907.1264	1,907.1264	0.0895		1,909.3641
Worker	0.8135	0.4754	6.2145	0.0201	2.0783	0.0131	2.0914	0.5513	0.0121	0.5633		2,003.6576	2,003.6576	0.0448		2,004.7773
Total	**1.0182**	**7.2959**	**7.8228**	**0.0381**	**2.5251**	**0.0279**	**2.5530**	**0.6799**	**0.0262**	**0.7061**		**3,910.7840**	**3,910.7840**	**0.1343**		**3,914.1414**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2047	6.8205	1.6083	0.0180	0.4468	0.0148	0.4615	0.1286	0.0141	0.1427		1,907.1264	1,907.1264	0.0895		1,909.3641
Worker	0.8135	0.4754	6.2145	0.0201	2.0783	0.0131	2.0914	0.5513	0.0121	0.5633		2,003.6576	2,003.6576	0.0448		2,004.7773
Total	**1.0182**	**7.2959**	**7.8228**	**0.0381**	**2.5251**	**0.0279**	**2.5530**	**0.6799**	**0.0262**	**0.7061**		**3,910.7840**	**3,910.7840**	**0.1343**		**3,914.1414**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1909	6.4641	1.5126	0.0178	0.4468	0.0128	0.4596	0.1286	0.0123	0.1409		1,888.5537	1,888.5537	0.0856		1,890.6933
Worker	0.7572	0.4264	5.7263	0.0194	2.0783	0.0128	2.0911	0.5513	0.0118	0.5630		1,930.1253	1,930.1253	0.0402		1,931.1308
Total	**0.9481**	**6.8905**	**7.2389**	**0.0372**	**2.5251**	**0.0256**	**2.5507**	**0.6799**	**0.0240**	**0.7039**		**3,818.6790**	**3,818.6790**	**0.1258**		**3,821.8241**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1909	6.4641	1.5126	0.0178	0.4468	0.0128	0.4596	0.1286	0.0123	0.1409		1,888.5537	1,888.5537	0.0856		1,890.6933
Worker	0.7572	0.4264	5.7263	0.0194	2.0783	0.0128	2.0911	0.5513	0.0118	0.5630		1,930.1253	1,930.1253	0.0402		1,931.1308
Total	**0.9481**	**6.8905**	**7.2389**	**0.0372**	**2.5251**	**0.0256**	**2.5507**	**0.6799**	**0.0240**	**0.7039**		**3,818.6790**	**3,818.6790**	**0.1258**		**3,821.8241**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0466					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1494**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0449	0.0253	0.3395	1.1500e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		114.4343	114.4343	2.3800e-003		114.4939
Total	**0.0449**	**0.0253**	**0.3395**	**1.1500e-003**	**0.1232**	**7.6000e-004**	**0.1240**	**0.0327**	**7.0000e-004**	**0.0334**		**114.4343**	**114.4343**	**2.3800e-003**		**114.4939**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0466					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1494**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0449	0.0253	0.3395	1.1500e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		114.4343	114.4343	2.3800e-003		114.4939
Total	**0.0449**	**0.0253**	**0.3395**	**1.1500e-003**	**0.1232**	**7.6000e-004**	**0.1240**	**0.0327**	**7.0000e-004**	**0.0334**		**114.4343**	**114.4343**	**2.3800e-003**		**114.4939**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.1518					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**63.3563**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1526	0.0860	1.1543	3.9000e-003	0.4190	2.5700e-003	0.4215	0.1111	2.3700e-003	0.1135		389.0766	389.0766	8.1100e-003		389.2793
Total	**0.1526**	**0.0860**	**1.1543**	**3.9000e-003**	**0.4190**	**2.5700e-003**	**0.4215**	**0.1111**	**2.3700e-003**	**0.1135**		**389.0766**	**389.0766**	**8.1100e-003**		**389.2793**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.1518					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**63.3563**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1526	0.0860	1.1543	3.9000e-003	0.4190	2.5700e-003	0.4215	0.1111	2.3700e-003	0.1135		389.0766	389.0766	8.1100e-003		389.2793
Total	**0.1526**	**0.0860**	**1.1543**	**3.9000e-003**	**0.4190**	**2.5700e-003**	**0.4215**	**0.1111**	**2.3700e-003**	**0.1135**		**389.0766**	**389.0766**	**8.1100e-003**		**389.2793**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.0909	7.4342	18.3832	0.0662	5.6564	0.0522	5.7086	1.5132	0.0487	1.5619		6,704.1628	6,704.1628	0.2358		6,710.0565
Unmitigated	2.1607	7.8237	20.1930	0.0742	6.4132	0.0580	6.4712	1.7157	0.0541	1.7698		7,511.9553	7,511.9553	0.2574		7,518.3911

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	988.47	988.47	988.47	2,282,978	2,013,586
Day-Care Center	536.40	536.40	536.40	631,679	557,141
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	67.66	67.66	67.66	104,200	91,905
Total	1,592.53	1,592.53	1,592.53	3,018,857	2,662,632

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Condo/Townhouse	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Day-Care Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Enclosed Parking Structure	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Parking Lot	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Strip Mall	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

29212 Mission Boulevard Project - Bay Area AQMD Air District, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603
NaturalGas Unmitigated	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	11764.2	0.1269	1.0842	0.4613	6.9200e-003		0.0877	0.0877		0.0877	0.0877		1,384.0222	1,384.0222	0.0265	0.0254	1,392.2467
Day-Care Center	363.152	3.9200e-003	0.0356	0.0299	2.1000e-004		2.7100e-003	2.7100e-003		2.7100e-003	2.7100e-003		42.7238	42.7238	8.2000e-004	7.8000e-004	42.9777
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	34.9474	3.8000e-004	3.4300e-003	2.8800e-003	2.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		4.1115	4.1115	8.0000e-005	8.0000e-005	4.1359
Total		**0.1312**	**1.1232**	**0.4941**	**7.1500e-003**		**0.0906**	**0.0906**		**0.0906**	**0.0906**		**1,430.8574**	**1,430.8574**	**0.0274**	**0.0262**	**1,439.3603**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	11.7642	0.1269	1.0842	0.4613	6.9200e-003		0.0877	0.0877		0.0877	0.0877		1,384.0222	1,384.0222	0.0265	0.0254	1,392.2467
Day-Care Center	0.363152	3.9200e-003	0.0356	0.0299	2.1000e-004		2.7100e-003	2.7100e-003		2.7100e-003	2.7100e-003		42.7238	42.7238	8.2000e-004	7.8000e-004	42.9777
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.0349474	3.8000e-004	3.4300e-003	2.8800e-003	2.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		4.1115	4.1115	8.0000e-005	8.0000e-005	4.1359
Total		**0.1312**	**1.1232**	**0.4941**	**7.1500e-003**		**0.0906**	**0.0906**		**0.0906**	**0.0906**		**1,430.8574**	**1,430.8574**	**0.0274**	**0.0262**	**1,439.3603**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.7288	1.3506	16.1373	8.3000e-003		0.1811	0.1811		0.1811	0.1811	0.0000	1,522.3803	1,522.3803	0.0559	0.0274	1,531.9407
Unmitigated	83.3199	1.8985	118.3335	0.1987		14.6654	14.6654		14.6654	14.6654	1,582.0899	728.5803	2,310.6703	2.1923	0.1118	2,398.8008

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	77.7282	1.7184	102.6943	0.1979		14.5790	14.5790		14.5790	14.5790	1,582.0899	700.4118	2,282.5017	2.1650	0.1118	2,369.9512
Landscaping	0.4738	0.1802	15.6392	8.3000e-004		0.0865	0.0865		0.0865	0.0865		28.1686	28.1686	0.0272		28.8496
Total	**83.3199**	**1.8985**	**118.3335**	**0.1987**		**14.6654**	**14.6654**		**14.6654**	**14.6654**	**1,582.0899**	**728.5803**	**2,310.6703**	**2.1922**	**0.1118**	**2,398.8008**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1370	1.1705	0.4981	7.4700e-003		0.0946	0.0946		0.0946	0.0946	0.0000	1,494.2118	1,494.2118	0.0286	0.0274	1,503.0911
Landscaping	0.4738	0.1802	15.6392	8.3000e-004		0.0865	0.0865		0.0865	0.0865		28.1686	28.1686	0.0272		28.8496
Total	**5.7288**	**1.3506**	**16.1373**	**8.3000e-003**		**0.1811**	**0.1811**		**0.1811**	**0.1811**	**0.0000**	**1,522.3803**	**1,522.3803**	**0.0559**	**0.0274**	**1,531.9407**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

29212 Mission Boulevard Project

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	189.00	Dwelling Unit	8.97	189,000.00	541
Strip Mall	2.77	1000sqft	0.00	2,773.00	0
Day-Care Center	8.05	1000sqft	0.00	8,048.00	0
Enclosed Parking Structure	312.00	Space	0.00	124,800.00	0
Parking Lot	96.00	Space	0.80	38,400.00	0
City Park	2.40	Acre	2.40	104,544.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	328.8	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

29212 Mission Boulevard Project - Bay Area AQMD Air District, Winter

Project Characteristics - CO2 intensity factor based on 5-year average (PG&E, 2015).

Land Use - The project would include 189 townhome units, 8,048 square feet of ground floor commercial area which could be used as a daycare, 2,773-square-foot retail space, parking, and landscaping, open space, Planned Development amenities, and a multi-use trail easement.

Construction Phase - The construction period is anticipated to begin in March 2020 and would occur over an approximately 33-month period.

Grading - Approximately 10,000 cubic yards of soils would be exported from the project site.

Demolition - A total of 12,196 square feet of asphalt are anticipated to be removed from the project site during construction.

Vehicle Trips - Based on project trip generation (LSA 2019).

Construction Off-road Equipment Mitigation - BAAQMD Basic Construction Mitigation Measures

Mobile Land Use Mitigation -

Area Mitigation - Only natural gas hearth

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	300.00	500.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	PhaseEndDate	9/10/2021	12/30/2022
tblConstructionPhase	PhaseEndDate	7/16/2021	8/26/2022
tblConstructionPhase	PhaseEndDate	3/27/2020	4/10/2020
tblConstructionPhase	PhaseEndDate	5/22/2020	9/25/2020
tblConstructionPhase	PhaseEndDate	8/13/2021	10/28/2022
tblConstructionPhase	PhaseEndDate	4/10/2020	7/3/2020
tblConstructionPhase	PhaseStartDate	8/14/2021	10/31/2022
tblConstructionPhase	PhaseStartDate	5/23/2020	9/28/2020
tblConstructionPhase	PhaseStartDate	4/11/2020	7/6/2020

tblConstructionPhase	PhaseStartDate	7/17/2021	8/29/2022
tblConstructionPhase	PhaseStartDate	3/28/2020	4/13/2020
tblGrading	AcresOfGrading	150.00	12.17
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	LotAcreage	11.81	8.97
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.18	0.00
tblLandUse	LotAcreage	2.81	0.00
tblLandUse	LotAcreage	0.86	0.80
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	5.23
tblVehicleTrips	ST_TR	6.21	66.65
tblVehicleTrips	ST_TR	42.04	24.40
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	5.23
tblVehicleTrips	SU_TR	5.83	66.65
tblVehicleTrips	SU_TR	20.43	24.40
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	5.23
tblVehicleTrips	WD_TR	74.06	66.65
tblVehicleTrips	WD_TR	44.32	24.40

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.7002	56.3636	33.7391	0.0798	18.2141	2.1984	20.4125	9.9699	2.0225	11.9924	0.0000	7,899.7733	7,899.7733	2.0393	0.0000	7,950.7543
2021	2.9795	24.8985	24.2381	0.0630	2.5251	0.9870	3.5121	0.6799	0.9280	1.6078	0.0000	6,257.8308	6,257.8308	0.7546	0.0000	6,276.6962
2022	63.5185	22.6550	23.4366	0.0621	2.5251	0.8351	3.3602	0.6799	0.7856	1.4655	0.0000	6,172.7342	6,172.7342	0.7418	0.0000	6,191.2803
Maximum	**63.5185**	**56.3636**	**33.7391**	**0.0798**	**18.2141**	**2.1984**	**20.4125**	**9.9699**	**2.0225**	**11.9924**	**0.0000**	**7,899.7733**	**7,899.7733**	**2.0393**	**0.0000**	**7,950.7543**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	4.7002	56.3636	33.7391	0.0798	8.2777	2.1984	10.4761	4.5080	2.0225	6.5305	0.0000	7,899.7733	7,899.7733	2.0393	0.0000	7,950.7543
2021	2.9795	24.8985	24.2381	0.0630	2.5251	0.9870	3.5121	0.6799	0.9280	1.6078	0.0000	6,257.8308	6,257.8308	0.7546	0.0000	6,276.6962
2022	63.5185	22.6550	23.4366	0.0621	2.5251	0.8351	3.3602	0.6799	0.7856	1.4655	0.0000	6,172.7342	6,172.7342	0.7418	0.0000	6,191.2803
Maximum	**63.5185**	**56.3636**	**33.7391**	**0.0798**	**8.2777**	**2.1984**	**10.4761**	**4.5080**	**2.0225**	**6.5305**	**0.0000**	**7,899.7733**	**7,899.7733**	**2.0393**	**0.0000**	**7,950.7543**

29212 Mission Boulevard Project - Bay Area AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	42.71	0.00	36.42	48.21	0.00	36.25	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	83.3199	1.8985	118.3335	0.1987		14.6654	14.6654		14.6654	14.6654	1,582.0899	728.5803	2,310.6703	2.1923	0.1118	2,398.8008
Energy	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603
Mobile	1.8431	8.1799	20.6719	0.0694	6.4132	0.0583	6.4715	1.7157	0.0545	1.7702		7,032.2895	7,032.2895	0.2646		7,038.9053
Total	**85.2942**	**11.2016**	**139.4995**	**0.2753**	**6.4132**	**14.8144**	**21.2275**	**1.7157**	**14.8105**	**16.5262**	**1,582.0899**	**9,191.7273**	**10,773.8172**	**2.4843**	**0.1381**	**10,877.0663**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.7288	1.3506	16.1373	8.3000e-003		0.1811	0.1811		0.1811	0.1811	0.0000	1,522.3803	1,522.3803	0.0559	0.0274	1,531.9407
Energy	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603
Mobile	1.7743	7.7460	19.0616	0.0620	5.6564	0.0525	5.7089	1.5132	0.0490	1.5622		6,274.1331	6,274.1331	0.2439		6,280.2302
Total	**7.6343**	**10.2198**	**35.6931**	**0.0774**	**5.6564**	**0.3242**	**5.9806**	**1.5132**	**0.3207**	**1.8340**	**0.0000**	**9,227.3709**	**9,227.3709**	**0.3272**	**0.0536**	**9,251.5312**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**91.05**	**8.76**	**74.41**	**71.88**	**11.80**	**97.81**	**71.83**	**11.80**	**97.83**	**88.90**	**100.00**	**-0.39**	**14.35**	**86.83**	**61.16**	**14.94**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/2/2020	4/10/2020	5	30	
2	Site Preparation	Site Preparation	4/13/2020	7/3/2020	5	60	
3	Grading	Grading	7/6/2020	9/25/2020	5	60	
4	Building Construction	Building Construction	9/28/2020	8/26/2022	5	500	
5	Paving	Paving	8/29/2022	10/28/2022	5	45	
6	Architectural Coating	Architectural Coating	10/31/2022	12/30/2022	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.17

Acres of Paving: 0.8

Residential Indoor: 382,725; Residential Outdoor: 127,575; Non-Residential Indoor: 16,232; Non-Residential Outdoor: 5,411; Striped Parking Area: 9,792 (Architectural Coating – sqft)

OffRoad Equipment

29212 Mission Boulevard Project - Bay Area AQMD Air District, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	55.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	253.00	66.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.4002	0.0000	0.4002	0.0606	0.0000	0.0606			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419		3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.4002**	**1.6587**	**2.0589**	**0.0606**	**1.5419**	**1.6024**		**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0155	0.5380	0.1124	1.4300e-003	0.0320	1.7500e-003	0.0338	8.7800e-003	1.6700e-003	0.0105		153.3572	153.3572	8.2000e-003		153.5620
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0552	0.0390	0.3780	1.1400e-003	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		113.4098	113.4098	2.7700e-003		113.4792
Total	**0.0707**	**0.5770**	**0.4903**	**2.5700e-003**	**0.1553**	**2.5500e-003**	**0.1578**	**0.0415**	**2.4100e-003**	**0.0439**		**266.7670**	**266.7670**	**0.0110**		**267.0412**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1801	0.0000	0.1801	0.0273	0.0000	0.0273			0.0000			0.0000
Off-Road	3.3121	33.2010	21.7532	0.0388		1.6587	1.6587		1.5419	1.5419	0.0000	3,747.7049	3,747.7049	1.0580		3,774.1536
Total	**3.3121**	**33.2010**	**21.7532**	**0.0388**	**0.1801**	**1.6587**	**1.8388**	**0.0273**	**1.5419**	**1.5691**	**0.0000**	**3,747.7049**	**3,747.7049**	**1.0580**		**3,774.1536**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0155	0.5380	0.1124	1.4300e-003	0.0320	1.7500e-003	0.0338	8.7800e-003	1.6700e-003	0.0105		153.3572	153.3572	8.2000e-003		153.5620
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0552	0.0390	0.3780	1.1400e-003	0.1232	8.0000e-004	0.1240	0.0327	7.4000e-004	0.0334		113.4098	113.4098	2.7700e-003		113.4792
Total	**0.0707**	**0.5770**	**0.4903**	**2.5700e-003**	**0.1553**	**2.5500e-003**	**0.1578**	**0.0415**	**2.4100e-003**	**0.0439**		**266.7670**	**266.7670**	**0.0110**		**267.0412**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**18.0663**	**2.1974**	**20.2637**	**9.9307**	**2.0216**	**11.9523**		**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0662	0.0468	0.4536	1.3700e-003	0.1479	9.6000e-004	0.1488	0.0392	8.8000e-004	0.0401		136.0918	136.0918	3.3300e-003		136.1750
Total	**0.0662**	**0.0468**	**0.4536**	**1.3700e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**136.0918**	**136.0918**	**3.3300e-003**		**136.1750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	**4.0765**	**42.4173**	**21.5136**	**0.0380**	**8.1298**	**2.1974**	**10.3272**	**4.4688**	**2.0216**	**6.4904**	**0.0000**	**3,685.1016**	**3,685.1016**	**1.1918**		**3,714.8975**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0662	0.0468	0.4536	1.3700e-003	0.1479	9.6000e-004	0.1488	0.0392	8.8000e-004	0.0401		136.0918	136.0918	3.3300e-003		136.1750
Total	**0.0662**	**0.0468**	**0.4536**	**1.3700e-003**	**0.1479**	**9.6000e-004**	**0.1488**	**0.0392**	**8.8000e-004**	**0.0401**		**136.0918**	**136.0918**	**3.3300e-003**		**136.1750**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2560	0.0000	6.2560	3.3363	0.0000	3.3363			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**6.2560**	**2.1739**	**8.4299**	**3.3363**	**2.0000**	**5.3363**		**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1766	6.1140	1.2768	0.0163	0.3640	0.0199	0.3838	0.0997	0.0190	0.1187		1,742.6950	1,742.6950	0.0931		1,745.0231
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0520	0.5040	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.2131	151.2131	3.7000e-003		151.3055
Total	**0.2501**	**6.1660**	**1.7808**	**0.0178**	**0.5283**	**0.0209**	**0.5492**	**0.1433**	**0.0200**	**0.1633**		**1,893.9080**	**1,893.9080**	**0.0968**		**1,896.3286**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8152	0.0000	2.8152	1.5013	0.0000	1.5013			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	**4.4501**	**50.1975**	**31.9583**	**0.0620**	**2.8152**	**2.1739**	**4.9891**	**1.5013**	**2.0000**	**3.5013**	**0.0000**	**6,005.8653**	**6,005.8653**	**1.9424**		**6,054.4257**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1766	6.1140	1.2768	0.0163	0.3640	0.0199	0.3838	0.0997	0.0190	0.1187		1,742.6950	1,742.6950	0.0931		1,745.0231
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0735	0.0520	0.5040	1.5200e-003	0.1643	1.0600e-003	0.1654	0.0436	9.8000e-004	0.0446		151.2131	151.2131	3.7000e-003		151.3055
Total	**0.2501**	**6.1660**	**1.7808**	**0.0178**	**0.5283**	**0.0209**	**0.5492**	**0.1433**	**0.0200**	**0.1633**		**1,893.9080**	**1,893.9080**	**0.0968**		**1,896.3286**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2633	7.6057	2.0525	0.0177	0.4468	0.0375	0.4842	0.1286	0.0359	0.1645		1,876.5598	1,876.5598	0.1026		1,879.1236
Worker	0.9301	0.6578	6.3753	0.0192	2.0783	0.0135	2.0918	0.5513	0.0124	0.5637		1,912.8455	1,912.8455	0.0468		1,914.0151
Total	**1.1934**	**8.2634**	**8.4278**	**0.0369**	**2.5251**	**0.0510**	**2.5760**	**0.6799**	**0.0483**	**0.7281**		**3,789.4053**	**3,789.4053**	**0.1493**		**3,793.1387**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2633	7.6057	2.0525	0.0177	0.4468	0.0375	0.4842	0.1286	0.0359	0.1645		1,876.5598	1,876.5598	0.1026		1,879.1236
Worker	0.9301	0.6578	6.3753	0.0192	2.0783	0.0135	2.0918	0.5513	0.0124	0.5637		1,912.8455	1,912.8455	0.0468		1,914.0151
Total	**1.1934**	**8.2634**	**8.4278**	**0.0369**	**2.5251**	**0.0510**	**2.5760**	**0.6799**	**0.0483**	**0.7281**		**3,789.4053**	**3,789.4053**	**0.1493**		**3,793.1387**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2168	6.8792	1.8486	0.0176	0.4468	0.0153	0.4621	0.1286	0.0146	0.1432		1,858.7392	1,858.7392	0.0968		1,861.1601
Worker	0.8618	0.5872	5.8142	0.0185	2.0783	0.0131	2.0914	0.5513	0.0121	0.5633		1,845.7277	1,845.7277	0.0418		1,846.7718
Total	**1.0786**	**7.4664**	**7.6629**	**0.0361**	**2.5251**	**0.0284**	**2.5535**	**0.6799**	**0.0267**	**0.7066**		**3,704.4669**	**3,704.4669**	**0.1386**		**3,707.9319**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2168	6.8792	1.8486	0.0176	0.4468	0.0153	0.4621	0.1286	0.0146	0.1432		1,858.7392	1,858.7392	0.0968		1,861.1601
Worker	0.8618	0.5872	5.8142	0.0185	2.0783	0.0131	2.0914	0.5513	0.0121	0.5633		1,845.7277	1,845.7277	0.0418		1,846.7718
Total	**1.0786**	**7.4664**	**7.6629**	**0.0361**	**2.5251**	**0.0284**	**2.5535**	**0.6799**	**0.0267**	**0.7066**		**3,704.4669**	**3,704.4669**	**0.1386**		**3,707.9319**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2022	6.5128	1.7378	0.0174	0.4468	0.0133	0.4601	0.1286	0.0127	0.1413		1,840.3368	1,840.3368	0.0925		1,842.6494
Worker	0.8044	0.5265	5.3355	0.0178	2.0783	0.0128	2.0911	0.5513	0.0118	0.5630		1,778.0638	1,778.0638	0.0374		1,778.9987
Total	**1.0065**	**7.0393**	**7.0732**	**0.0352**	**2.5251**	**0.0261**	**2.5512**	**0.6799**	**0.0245**	**0.7043**		**3,618.4006**	**3,618.4006**	**0.1299**		**3,621.6480**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2022	6.5128	1.7378	0.0174	0.4468	0.0133	0.4601	0.1286	0.0127	0.1413		1,840.3368	1,840.3368	0.0925		1,842.6494
Worker	0.8044	0.5265	5.3355	0.0178	2.0783	0.0128	2.0911	0.5513	0.0118	0.5630		1,778.0638	1,778.0638	0.0374		1,778.9987
Total	**1.0065**	**7.0393**	**7.0732**	**0.0352**	**2.5251**	**0.0261**	**2.5512**	**0.6799**	**0.0245**	**0.7043**		**3,618.4006**	**3,618.4006**	**0.1299**		**3,621.6480**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0466					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1494**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0312	0.3163	1.0600e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		105.4188	105.4188	2.2200e-003		105.4742
Total	**0.0477**	**0.0312**	**0.3163**	**1.0600e-003**	**0.1232**	**7.6000e-004**	**0.1240**	**0.0327**	**7.0000e-004**	**0.0334**		**105.4188**	**105.4188**	**2.2200e-003**		**105.4742**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0466					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1494**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0477	0.0312	0.3163	1.0600e-003	0.1232	7.6000e-004	0.1240	0.0327	7.0000e-004	0.0334		105.4188	105.4188	2.2200e-003		105.4742
Total	**0.0477**	**0.0312**	**0.3163**	**1.0600e-003**	**0.1232**	**7.6000e-004**	**0.1240**	**0.0327**	**7.0000e-004**	**0.0334**		**105.4188**	**105.4188**	**2.2200e-003**		**105.4742**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.1518					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**63.3563**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1621	0.1061	1.0755	3.5900e-003	0.4190	2.5700e-003	0.4215	0.1111	2.3700e-003	0.1135		358.4239	358.4239	7.5400e-003		358.6124
Total	**0.1621**	**0.1061**	**1.0755**	**3.5900e-003**	**0.4190**	**2.5700e-003**	**0.4215**	**0.1111**	**2.3700e-003**	**0.1135**		**358.4239**	**358.4239**	**7.5400e-003**		**358.6124**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	63.1518					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**63.3563**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1621	0.1061	1.0755	3.5900e-003	0.4190	2.5700e-003	0.4215	0.1111	2.3700e-003	0.1135		358.4239	358.4239	7.5400e-003		358.6124
Total	**0.1621**	**0.1061**	**1.0755**	**3.5900e-003**	**0.4190**	**2.5700e-003**	**0.4215**	**0.1111**	**2.3700e-003**	**0.1135**		**358.4239**	**358.4239**	**7.5400e-003**		**358.6124**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7743	7.7460	19.0616	0.0620	5.6564	0.0525	5.7089	1.5132	0.0490	1.5622		6,274.1331	6,274.1331	0.2439		6,280.2302
Unmitigated	1.8431	8.1799	20.6719	0.0694	6.4132	0.0583	6.4715	1.7157	0.0545	1.7702		7,032.2895	7,032.2895	0.2646		7,038.9053

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	988.47	988.47	988.47	2,282,978	2,013,586
Day-Care Center	536.40	536.40	536.40	631,679	557,141
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	67.66	67.66	67.66	104,200	91,905
Total	1,592.53	1,592.53	1,592.53	3,018,857	2,662,632

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Condo/Townhouse	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Day-Care Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Enclosed Parking Structure	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Parking Lot	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Strip Mall	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

29212 Mission Boulevard Project - Bay Area AQMD Air District, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603
NaturalGas Unmitigated	0.1312	1.1232	0.4941	7.1500e-003		0.0906	0.0906		0.0906	0.0906		1,430.8574	1,430.8574	0.0274	0.0262	1,439.3603

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	11764.2	0.1269	1.0842	0.4613	6.9200e-003		0.0877	0.0877		0.0877	0.0877		1,384.0222	1,384.0222	0.0265	0.0254	1,392.2467
Day-Care Center	363.152	3.9200e-003	0.0356	0.0299	2.1000e-004		2.7100e-003	2.7100e-003		2.7100e-003	2.7100e-003		42.7238	42.7238	8.2000e-004	7.8000e-004	42.9777
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	34.9474	3.8000e-004	3.4300e-003	2.8800e-003	2.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		4.1115	4.1115	8.0000e-005	8.0000e-005	4.1359
Total		**0.1312**	**1.1232**	**0.4941**	**7.1500e-003**		**0.0906**	**0.0906**		**0.0906**	**0.0906**		**1,430.8574**	**1,430.8574**	**0.0274**	**0.0262**	**1,439.3603**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	11.7642	0.1269	1.0842	0.4613	6.9200e-003		0.0877	0.0877		0.0877	0.0877		1,384.0222	1,384.0222	0.0265	0.0254	1,392.2467
Day-Care Center	0.363152	3.9200e-003	0.0356	0.0299	2.1000e-004		2.7100e-003	2.7100e-003		2.7100e-003	2.7100e-003		42.7238	42.7238	8.2000e-004	7.8000e-004	42.9777
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.0349474	3.8000e-004	3.4300e-003	2.8800e-003	2.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004		4.1115	4.1115	8.0000e-005	8.0000e-005	4.1359
Total		**0.1312**	**1.1232**	**0.4941**	**7.1500e-003**		**0.0906**	**0.0906**		**0.0906**	**0.0906**		**1,430.8574**	**1,430.8574**	**0.0274**	**0.0262**	**1,439.3603**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.7288	1.3506	16.1373	8.3000e-003		0.1811	0.1811		0.1811	0.1811	0.0000	1,522.3803	1,522.3803	0.0559	0.0274	1,531.9407
Unmitigated	83.3199	1.8985	118.3335	0.1987		14.6654	14.6654		14.6654	14.6654	1,582.0899	728.5803	2,310.6703	2.1923	0.1118	2,398.8008

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	77.7282	1.7184	102.6943	0.1979		14.5790	14.5790		14.5790	14.5790	1,582.0899	700.4118	2,282.5017	2.1650	0.1118	2,369.9512
Landscaping	0.4738	0.1802	15.6392	8.3000e-004		0.0865	0.0865		0.0865	0.0865		28.1686	28.1686	0.0272		28.8496
Total	**83.3199**	**1.8985**	**118.3335**	**0.1987**		**14.6654**	**14.6654**		**14.6654**	**14.6654**	**1,582.0899**	**728.5803**	**2,310.6703**	**2.1922**	**0.1118**	**2,398.8008**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.7786					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.3394					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1370	1.1705	0.4981	7.4700e-003		0.0946	0.0946		0.0946	0.0946	0.0000	1,494.2118	1,494.2118	0.0286	0.0274	1,503.0911
Landscaping	0.4738	0.1802	15.6392	8.3000e-004		0.0865	0.0865		0.0865	0.0865		28.1686	28.1686	0.0272		28.8496
Total	**5.7288**	**1.3506**	**16.1373**	**8.3000e-003**		**0.1811**	**0.1811**		**0.1811**	**0.1811**	**0.0000**	**1,522.3803**	**1,522.3803**	**0.0559**	**0.0274**	**1,531.9407**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

29212 Mission Boulevard Project - Mitigated

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	189.00	Dwelling Unit	8.97	189,000.00	541
Strip Mall	2.77	1000sqft	0.00	2,773.00	0
Day-Care Center	8.05	1000sqft	0.00	8,048.00	0
Enclosed Parking Structure	312.00	Space	0.00	124,800.00	0
Parking Lot	96.00	Space	0.80	38,400.00	0
City Park	2.40	Acre	2.40	104,544.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	328.8	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 intensity factor based on 5-year average (PG&E, 2015).

Land Use - The project would include 189 townhome units, 8,048 square feet of ground floor commercial area which could be used as a daycare, 2,773-square-foot retail space, parking, and landscaping, open space, Planned Development amenities, and a multi-use trail easement.

Construction Phase - The construction period is anticipated to begin in March 2020 and would occur over an approximately 33-month period.

Grading - Approximately 10,000 cubic yards of soils would be exported from the project site.

Demolition - A total of 12,196 square feet of asphalt are anticipated to be removed from the project site during construction.

Vehicle Trips - Based on project trip generation (LSA 2019).

Construction Off-road Equipment Mitigation - BAAQMD Basic Construction Mitigation Measures and Tier 4 construction equipment

Mobile Land Use Mitigation -

Area Mitigation - Only natural gas hearth

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	300.00	500.00
tblConstructionPhase	NumDays	20.00	30.00
tblConstructionPhase	NumDays	30.00	60.00
tblConstructionPhase	NumDays	20.00	45.00
tblConstructionPhase	NumDays	10.00	60.00
tblConstructionPhase	PhaseEndDate	9/10/2021	12/30/2022
tblConstructionPhase	PhaseEndDate	7/16/2021	8/26/2022
tblConstructionPhase	PhaseEndDate	3/27/2020	4/10/2020
tblConstructionPhase	PhaseEndDate	5/22/2020	9/25/2020
tblConstructionPhase	PhaseEndDate	8/13/2021	10/28/2022
tblConstructionPhase	PhaseEndDate	4/10/2020	7/3/2020
tblConstructionPhase	PhaseStartDate	8/14/2021	10/31/2022
tblConstructionPhase	PhaseStartDate	5/23/2020	9/28/2020

tblConstructionPhase	PhaseStartDate	4/11/2020	7/6/2020
tblConstructionPhase	PhaseStartDate	7/17/2021	8/29/2022
tblConstructionPhase	PhaseStartDate	3/28/2020	4/13/2020
tblGrading	AcresOfGrading	150.00	12.17
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	LotAcreage	11.81	8.97
tblLandUse	LotAcreage	0.06	0.00
tblLandUse	LotAcreage	0.18	0.00
tblLandUse	LotAcreage	2.81	0.00
tblLandUse	LotAcreage	0.86	0.80
tblProjectCharacteristics	CO2IntensityFactor	641.35	328.8
tblVehicleTrips	ST_TR	22.75	0.00
tblVehicleTrips	ST_TR	5.67	5.23
tblVehicleTrips	ST_TR	6.21	66.65
tblVehicleTrips	ST_TR	42.04	24.40
tblVehicleTrips	SU_TR	16.74	0.00
tblVehicleTrips	SU_TR	4.84	5.23
tblVehicleTrips	SU_TR	5.83	66.65
tblVehicleTrips	SU_TR	20.43	24.40
tblVehicleTrips	WD_TR	1.89	0.00
tblVehicleTrips	WD_TR	5.81	5.23
tblVehicleTrips	WD_TR	74.06	66.65
tblVehicleTrips	WD_TR	44.32	24.40

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.4263	4.4158	2.8640	6.4200e-003	0.8414	0.1970	1.0384	0.4275	0.1823	0.6098	0.0000	574.1458	574.1458	0.1265	0.0000	577.3090
2021	0.3767	3.2444	3.1281	8.2800e-003	0.3174	0.1288	0.4461	0.0857	0.1211	0.2068	0.0000	746.2065	746.2065	0.0889	0.0000	748.4279
2022	1.6788	2.2079	2.3711	6.0000e-003	0.2185	0.0857	0.3041	0.0590	0.0804	0.1394	0.0000	539.7794	539.7794	0.0721	0.0000	541.5809
Maximum	**1.6788**	**4.4158**	**3.1281**	**8.2800e-003**	**0.8414**	**0.1970**	**1.0384**	**0.4275**	**0.1823**	**0.6098**	**0.0000**	**746.2065**	**746.2065**	**0.1265**	**0.0000**	**748.4279**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.1028	0.7441	2.9199	6.4200e-003	0.4368	9.6700e-003	0.4464	0.2081	9.5500e-003	0.2176	0.0000	574.1453	574.1453	0.1265	0.0000	577.3086
2021	0.1715	1.2612	3.2436	8.2800e-003	0.3174	8.9900e-003	0.3264	0.0857	8.7700e-003	0.0945	0.0000	746.2062	746.2062	0.0889	0.0000	748.4275
2022	1.5392	0.8188	2.5259	6.0000e-003	0.2185	6.6600e-003	0.2251	0.0590	6.5200e-003	0.0655	0.0000	539.7791	539.7791	0.0721	0.0000	541.5806
Maximum	**1.5392**	**1.2612**	**3.2436**	**8.2800e-003**	**0.4368**	**9.6700e-003**	**0.4464**	**0.2081**	**9.5500e-003**	**0.2176**	**0.0000**	**746.2062**	**746.2062**	**0.1265**	**0.0000**	**748.4275**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**26.93**	**71.38**	**-3.90**	**0.00**	**29.38**	**93.85**	**44.21**	**38.34**	**93.53**	**60.50**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**3-2-2020**	**6-1-2020**	1.3628	0.0905
2	**6-2-2020**	**9-1-2020**	1.7940	0.2431
3	**9-2-2020**	**12-1-2020**	1.2358	0.3671
4	**12-2-2020**	**3-1-2021**	0.9270	0.3668
5	**3-2-2021**	**6-1-2021**	0.9109	0.3598
6	**6-2-2021**	**9-1-2021**	0.9084	0.3574
7	**9-2-2021**	**12-1-2021**	0.9036	0.3586
8	**12-2-2021**	**3-1-2022**	0.8423	0.3463
9	**3-2-2022**	**6-1-2022**	0.8289	0.3440
10	**6-2-2022**	**9-1-2022**	0.7904	0.3218
11	**9-2-2022**	**9-30-2022**	0.1279	0.0167
		Highest	1.7940	0.3671

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.4128	0.0263	2.0080	1.2700e-003		0.0936	0.0936		0.0936	0.0936	8.6165	5.8391	14.4555	0.0161	5.7000e-004	15.0257
Energy	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	495.0533	495.0533	0.0273	9.0500e-003	498.4341
Mobile	0.3392	1.4640	3.5742	0.0128	1.1235	0.0106	1.1340	0.3015	9.8700e-003	0.3114	0.0000	1,172.9509	1,172.9509	0.0425	0.0000	1,174.0129
Waste						0.0000	0.0000		0.0000	0.0000	20.4067	0.0000	20.4067	1.2060	0.0000	50.5567
Water						0.0000	0.0000		0.0000	0.0000	4.0813	16.4559	20.5372	0.4206	0.0102	34.0924
Total	**1.7759**	**1.6952**	**5.6724**	**0.0153**	**1.1235**	**0.1207**	**1.2442**	**0.3015**	**0.1200**	**0.4216**	**33.1045**	**1,690.2991**	**1,723.4036**	**1.7125**	**0.0198**	**1,772.1218**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9774	0.0227	1.4103	1.2000e-004		8.3100e-003	8.3100e-003		8.3100e-003	8.3100e-003	0.0000	9.8502	9.8502	2.3700e-003	1.4000e-004	9.9506
Energy	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	495.0533	495.0533	0.0273	9.0500e-003	498.4341
Mobile	0.3268	1.3883	3.2823	0.0114	0.9909	9.5100e-003	1.0004	0.2659	8.8800e-003	0.2748	0.0000	1,047.0252	1,047.0252	0.0391	0.0000	1,048.0015
Waste						0.0000	0.0000		0.0000	0.0000	20.4067	0.0000	20.4067	1.2060	0.0000	50.5567
Water						0.0000	0.0000		0.0000	0.0000	4.0813	16.4559	20.5372	0.4206	0.0102	34.0924
Total	**1.3282**	**1.6161**	**4.7827**	**0.0128**	**0.9909**	**0.0344**	**1.0253**	**0.2659**	**0.0337**	**0.2997**	**24.4880**	**1,568.3845**	**1,592.8725**	**1.6954**	**0.0194**	**1,641.0352**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**25.21**	**4.67**	**15.68**	**16.43**	**11.80**	**71.54**	**17.60**	**11.80**	**71.90**	**28.92**	**26.03**	**7.21**	**7.57**	**1.00**	**2.17**	**7.40**

3.0 Construction Detail

Construction Phase

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	3/2/2020	4/10/2020	5	30	
2	Site Preparation	Site Preparation	4/13/2020	7/3/2020	5	60	
3	Grading	Grading	7/6/2020	9/25/2020	5	60	
4	Building Construction	Building Construction	9/28/2020	8/26/2022	5	500	
5	Paving	Paving	8/29/2022	10/28/2022	5	45	
6	Architectural Coating	Architectural Coating	10/31/2022	12/30/2022	5	45	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 12.17

Acres of Paving: 0.8

Residential Indoor: 382,725; Residential Outdoor: 127,575; Non-Residential Indoor: 16,232; Non-Residential Outdoor: 5,411; Striped Parking Area: 9,792 (Architectural Coating – sqft)

OffRoad Equipment

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	55.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	253.00	66.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	51.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.0000e-003	0.0000	6.0000e-003	9.1000e-004	0.0000	9.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0497	0.4980	0.3263	5.8000e-004		0.0249	0.0249		0.0231	0.0231	0.0000	50.9979	50.9979	0.0144	0.0000	51.3578
Total	**0.0497**	**0.4980**	**0.3263**	**5.8000e-004**	**6.0000e-003**	**0.0249**	**0.0309**	**9.1000e-004**	**0.0231**	**0.0240**	**0.0000**	**50.9979**	**50.9979**	**0.0144**	**0.0000**	**51.3578**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0400e-003	1.6200e-003	2.0000e-005	4.6000e-004	3.0000e-005	4.9000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	2.1075	2.1075	1.1000e-004	0.0000	2.1102
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.3000e-004	5.5300e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.5576	1.5576	4.0000e-005	0.0000	1.5586
Total	**9.8000e-004**	**8.5700e-003**	**7.1500e-003**	**4.0000e-005**	**2.2400e-003**	**4.0000e-005**	**2.2800e-003**	**6.0000e-004**	**3.0000e-005**	**6.3000e-004**	**0.0000**	**3.6652**	**3.6652**	**1.5000e-004**	**0.0000**	**3.6688**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.7000e-003	0.0000	2.7000e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.9300e-003	0.0301	0.3492	5.8000e-004		9.2000e-004	9.2000e-004		9.2000e-004	9.2000e-004	0.0000	50.9979	50.9979	0.0144	0.0000	51.3578
Total	**6.9300e-003**	**0.0301**	**0.3492**	**5.8000e-004**	**2.7000e-003**	**9.2000e-004**	**3.6200e-003**	**4.1000e-004**	**9.2000e-004**	**1.3300e-003**	**0.0000**	**50.9979**	**50.9979**	**0.0144**	**0.0000**	**51.3578**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	8.0400e-003	1.6200e-003	2.0000e-005	4.6000e-004	3.0000e-005	4.9000e-004	1.3000e-004	2.0000e-005	1.5000e-004	0.0000	2.1075	2.1075	1.1000e-004	0.0000	2.1102
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	5.3000e-004	5.5300e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.5576	1.5576	4.0000e-005	0.0000	1.5586
Total	**9.8000e-004**	**8.5700e-003**	**7.1500e-003**	**4.0000e-005**	**2.2400e-003**	**4.0000e-005**	**2.2800e-003**	**6.0000e-004**	**3.0000e-005**	**6.3000e-004**	**0.0000**	**3.6652**	**3.6652**	**1.5000e-004**	**0.0000**	**3.6688**

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5420	0.0000	0.5420	0.2979	0.0000	0.2979	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1223	1.2725	0.6454	1.1400e-003		0.0659	0.0659		0.0607	0.0607	0.0000	100.2920	100.2920	0.0324	0.0000	101.1030
Total	**0.1223**	**1.2725**	**0.6454**	**1.1400e-003**	**0.5420**	**0.0659**	**0.6079**	**0.2979**	**0.0607**	**0.3586**	**0.0000**	**100.2920**	**100.2920**	**0.0324**	**0.0000**	**101.1030**

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7900e-003	1.2800e-003	0.0133	4.0000e-005	4.2700e-003	3.0000e-005	4.3000e-003	1.1400e-003	3.0000e-005	1.1600e-003	0.0000	3.7383	3.7383	9.0000e-005	0.0000	3.7406
Total	**1.7900e-003**	**1.2800e-003**	**0.0133**	**4.0000e-005**	**4.2700e-003**	**3.0000e-005**	**4.3000e-003**	**1.1400e-003**	**3.0000e-005**	**1.1600e-003**	**0.0000**	**3.7383**	**3.7383**	**9.0000e-005**	**0.0000**	**3.7406**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2439	0.0000	0.2439	0.1341	0.0000	0.1341	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0140	0.0605	0.6261	1.1400e-003		1.8600e-003	1.8600e-003		1.8600e-003	1.8600e-003	0.0000	100.2919	100.2919	0.0324	0.0000	101.1028
Total	**0.0140**	**0.0605**	**0.6261**	**1.1400e-003**	**0.2439**	**1.8600e-003**	**0.2458**	**0.1341**	**1.8600e-003**	**0.1359**	**0.0000**	**100.2919**	**100.2919**	**0.0324**	**0.0000**	**101.1028**

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7900e-003	1.2800e-003	0.0133	4.0000e-005	4.2700e-003	3.0000e-005	4.3000e-003	1.1400e-003	3.0000e-005	1.1600e-003	0.0000	3.7383	3.7383	9.0000e-005	0.0000	3.7406
Total	**1.7900e-003**	**1.2800e-003**	**0.0133**	**4.0000e-005**	**4.2700e-003**	**3.0000e-005**	**4.3000e-003**	**1.1400e-003**	**3.0000e-005**	**1.1600e-003**	**0.0000**	**3.7383**	**3.7383**	**9.0000e-005**	**0.0000**	**3.7406**

3.4 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1877	0.0000	0.1877	0.1001	0.0000	0.1001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1335	1.5059	0.9588	1.8600e-003		0.0652	0.0652		0.0600	0.0600	0.0000	163.4529	163.4529	0.0529	0.0000	164.7745
Total	**0.1335**	**1.5059**	**0.9588**	**1.8600e-003**	**0.1877**	**0.0652**	**0.2529**	**0.1001**	**0.0600**	**0.1601**	**0.0000**	**163.4529**	**163.4529**	**0.0529**	**0.0000**	**164.7745**

3.4 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2200e-003	0.1827	0.0367	4.9000e-004	0.0106	5.9000e-004	0.0112	2.9000e-003	5.6000e-004	3.4700e-003	0.0000	47.8983	47.8983	2.4700e-003	0.0000	47.9600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9900e-003	1.4200e-003	0.0147	5.0000e-005	4.7400e-003	3.0000e-005	4.7700e-003	1.2600e-003	3.0000e-005	1.2900e-003	0.0000	4.1537	4.1537	1.0000e-004	0.0000	4.1562
Total	**7.2100e-003**	**0.1842**	**0.0515**	**5.4000e-004**	**0.0153**	**6.2000e-004**	**0.0159**	**4.1600e-003**	**5.9000e-004**	**4.7600e-003**	**0.0000**	**52.0520**	**52.0520**	**2.5700e-003**	**0.0000**	**52.1162**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0845	0.0000	0.0845	0.0450	0.0000	0.0450	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.0990	0.9900	1.8600e-003		3.0500e-003	3.0500e-003		3.0500e-003	3.0500e-003	0.0000	163.4527	163.4527	0.0529	0.0000	164.7743
Total	**0.0229**	**0.0990**	**0.9900**	**1.8600e-003**	**0.0845**	**3.0500e-003**	**0.0875**	**0.0450**	**3.0500e-003**	**0.0481**	**0.0000**	**163.4527**	**163.4527**	**0.0529**	**0.0000**	**164.7743**

3.4 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2200e-003	0.1827	0.0367	4.9000e-004	0.0106	5.9000e-004	0.0112	2.9000e-003	5.6000e-004	3.4700e-003	0.0000	47.8983	47.8983	2.4700e-003	0.0000	47.9600
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9900e-003	1.4200e-003	0.0147	5.0000e-005	4.7400e-003	3.0000e-005	4.7700e-003	1.2600e-003	3.0000e-005	1.2900e-003	0.0000	4.1537	4.1537	1.0000e-004	0.0000	4.1562
Total	**7.2100e-003**	**0.1842**	**0.0515**	**5.4000e-004**	**0.0153**	**6.2000e-004**	**0.0159**	**4.1600e-003**	**5.9000e-004**	**4.7600e-003**	**0.0000**	**52.0520**	**52.0520**	**2.5700e-003**	**0.0000**	**52.1162**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0731	0.6619	0.5813	9.3000e-004		0.0385	0.0385		0.0362	0.0362	0.0000	79.9054	79.9054	0.0195	0.0000	80.3928
Total	**0.0731**	**0.6619**	**0.5813**	**9.3000e-004**		**0.0385**	**0.0385**		**0.0362**	**0.0362**	**0.0000**	**79.9054**	**79.9054**	**0.0195**	**0.0000**	**80.3928**

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8100e-003	0.2627	0.0661	6.2000e-004	0.0149	1.2800e-003	0.0162	4.3200e-003	1.2300e-003	5.5400e-003	0.0000	59.6163	59.6163	3.0700e-003	0.0000	59.6932
Worker	0.0289	0.0207	0.2144	6.7000e-004	0.0690	4.6000e-004	0.0694	0.0184	4.3000e-004	0.0188	0.0000	60.4257	60.4257	1.4600e-003	0.0000	60.4623
Total	**0.0377**	**0.2834**	**0.2804**	**1.2900e-003**	**0.0839**	**1.7400e-003**	**0.0857**	**0.0227**	**1.6600e-003**	**0.0243**	**0.0000**	**120.0420**	**120.0420**	**4.5300e-003**	**0.0000**	**120.1554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0113	0.0771	0.6024	9.3000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	79.9054	79.9054	0.0195	0.0000	80.3927
Total	**0.0113**	**0.0771**	**0.6024**	**9.3000e-004**		**1.4100e-003**	**1.4100e-003**		**1.4100e-003**	**1.4100e-003**	**0.0000**	**79.9054**	**79.9054**	**0.0195**	**0.0000**	**80.3927**

3.5 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.8100e-003	0.2627	0.0661	6.2000e-004	0.0149	1.2800e-003	0.0162	4.3200e-003	1.2300e-003	5.5400e-003	0.0000	59.6163	59.6163	3.0700e-003	0.0000	59.6932
Worker	0.0289	0.0207	0.2144	6.7000e-004	0.0690	4.6000e-004	0.0694	0.0184	4.3000e-004	0.0188	0.0000	60.4257	60.4257	1.4600e-003	0.0000	60.4623
Total	**0.0377**	**0.2834**	**0.2804**	**1.2900e-003**	**0.0839**	**1.7400e-003**	**0.0857**	**0.0227**	**1.6600e-003**	**0.0243**	**0.0000**	**120.0420**	**120.0420**	**4.5300e-003**	**0.0000**	**120.1554**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0273	0.8996	0.2246	2.3200e-003	0.0565	1.9600e-003	0.0584	0.0163	1.8700e-003	0.0182	0.0000	223.3729	223.3729	0.0110	0.0000	223.6475
Worker	0.1013	0.0699	0.7405	2.4400e-003	0.2609	1.7100e-003	0.2626	0.0694	1.5700e-003	0.0710	0.0000	220.5469	220.5469	4.9500e-003	0.0000	220.6706
Total	**0.1287**	**0.9695**	**0.9651**	**4.7600e-003**	**0.3174**	**3.6700e-003**	**0.3210**	**0.0857**	**3.4400e-003**	**0.0892**	**0.0000**	**443.9199**	**443.9199**	**0.0159**	**0.0000**	**444.3180**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0428	0.2916	2.2786	3.5100e-003		5.3200e-003	5.3200e-003		5.3200e-003	5.3200e-003	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095
Total	**0.0428**	**0.2916**	**2.2786**	**3.5100e-003**		**5.3200e-003**	**5.3200e-003**		**5.3200e-003**	**5.3200e-003**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0273	0.8996	0.2246	2.3200e-003	0.0565	1.9600e-003	0.0584	0.0163	1.8700e-003	0.0182	0.0000	223.3729	223.3729	0.0110	0.0000	223.6475
Worker	0.1013	0.0699	0.7405	2.4400e-003	0.2609	1.7100e-003	0.2626	0.0694	1.5700e-003	0.0710	0.0000	220.5469	220.5469	4.9500e-003	0.0000	220.6706
Total	**0.1287**	**0.9695**	**0.9651**	**4.7600e-003**	**0.3174**	**3.6700e-003**	**0.3210**	**0.0857**	**3.4400e-003**	**0.0892**	**0.0000**	**443.9199**	**443.9199**	**0.0159**	**0.0000**	**444.3180**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1450	1.3273	1.3909	2.2900e-003		0.0688	0.0688		0.0647	0.0647	0.0000	196.9665	196.9665	0.0472	0.0000	198.1462
Total	**0.1450**	**1.3273**	**1.3909**	**2.2900e-003**		**0.0688**	**0.0688**		**0.0647**	**0.0647**	**0.0000**	**196.9665**	**196.9665**	**0.0472**	**0.0000**	**198.1462**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0166	0.5549	0.1375	1.5000e-003	0.0368	1.1100e-003	0.0379	0.0106	1.0600e-003	0.0117	0.0000	144.0653	144.0653	6.8400e-003	0.0000	144.2362
Worker	0.0615	0.0408	0.4433	1.5300e-003	0.1699	1.0900e-003	0.1710	0.0452	1.0000e-003	0.0462	0.0000	138.3848	138.3848	2.8900e-003	0.0000	138.4570
Total	**0.0781**	**0.5958**	**0.5808**	**3.0300e-003**	**0.2067**	**2.2000e-003**	**0.2089**	**0.0559**	**2.0600e-003**	**0.0579**	**0.0000**	**282.4501**	**282.4501**	**9.7300e-003**	**0.0000**	**282.6932**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0279	0.1900	1.4841	2.2900e-003		3.4700e-003	3.4700e-003		3.4700e-003	3.4700e-003	0.0000	196.9662	196.9662	0.0472	0.0000	198.1459
Total	**0.0279**	**0.1900**	**1.4841**	**2.2900e-003**		**3.4700e-003**	**3.4700e-003**		**3.4700e-003**	**3.4700e-003**	**0.0000**	**196.9662**	**196.9662**	**0.0472**	**0.0000**	**198.1459**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0166	0.5549	0.1375	1.5000e-003	0.0368	1.1100e-003	0.0379	0.0106	1.0600e-003	0.0117	0.0000	144.0653	144.0653	6.8400e-003	0.0000	144.2362
Worker	0.0615	0.0408	0.4433	1.5300e-003	0.1699	1.0900e-003	0.1710	0.0452	1.0000e-003	0.0462	0.0000	138.3848	138.3848	2.8900e-003	0.0000	138.4570
Total	**0.0781**	**0.5958**	**0.5808**	**3.0300e-003**	**0.2067**	**2.2000e-003**	**0.2089**	**0.0559**	**2.0600e-003**	**0.0579**	**0.0000**	**282.4501**	**282.4501**	**9.7300e-003**	**0.0000**	**282.6932**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0248	0.2503	0.3281	5.1000e-004		0.0128	0.0128		0.0118	0.0118	0.0000	45.0620	45.0620	0.0146	0.0000	45.4264
Paving	1.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0259**	**0.2503**	**0.3281**	**5.1000e-004**		**0.0128**	**0.0128**		**0.0118**	**0.0118**	**0.0000**	**45.0620**	**45.0620**	**0.0146**	**0.0000**	**45.4264**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	6.4000e-004	6.9600e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.1718	2.1718	5.0000e-005	0.0000	2.1730
Total	**9.7000e-004**	**6.4000e-004**	**6.9600e-003**	**2.0000e-005**	**2.6700e-003**	**2.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.3000e-004**	**0.0000**	**2.1718**	**2.1718**	**5.0000e-005**	**0.0000**	**2.1730**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.3100e-003	0.0274	0.3892	5.1000e-004		8.4000e-004	8.4000e-004		8.4000e-004	8.4000e-004	0.0000	45.0620	45.0620	0.0146	0.0000	45.4263
Paving	1.0500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.3600e-003**	**0.0274**	**0.3892**	**5.1000e-004**		**8.4000e-004**	**8.4000e-004**		**8.4000e-004**	**8.4000e-004**	**0.0000**	**45.0620**	**45.0620**	**0.0146**	**0.0000**	**45.4263**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	6.4000e-004	6.9600e-003	2.0000e-005	2.6700e-003	2.0000e-005	2.6800e-003	7.1000e-004	2.0000e-005	7.3000e-004	0.0000	2.1718	2.1718	5.0000e-005	0.0000	2.1730
Total	**9.7000e-004**	**6.4000e-004**	**6.9600e-003**	**2.0000e-005**	**2.6700e-003**	**2.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.3000e-004**	**0.0000**	**2.1718**	**2.1718**	**5.0000e-005**	**0.0000**	**2.1730**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6000e-003	0.0317	0.0408	7.0000e-005		1.8400e-003	1.8400e-003		1.8400e-003	1.8400e-003	0.0000	5.7448	5.7448	3.7000e-004	0.0000	5.7542
Total	**1.4255**	**0.0317**	**0.0408**	**7.0000e-005**		**1.8400e-003**	**1.8400e-003**		**1.8400e-003**	**1.8400e-003**	**0.0000**	**5.7448**	**5.7448**	**3.7000e-004**	**0.0000**	**5.7542**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2800e-003	2.1800e-003	0.0237	8.0000e-005	9.0700e-003	6.0000e-005	9.1300e-003	2.4100e-003	5.0000e-005	2.4700e-003	0.0000	7.3842	7.3842	1.5000e-004	0.0000	7.3880
Total	**3.2800e-003**	**2.1800e-003**	**0.0237**	**8.0000e-005**	**9.0700e-003**	**6.0000e-005**	**9.1300e-003**	**2.4100e-003**	**5.0000e-005**	**2.4700e-003**	**0.0000**	**7.3842**	**7.3842**	**1.5000e-004**	**0.0000**	**7.3880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.4209					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.7000e-004	2.9000e-003	0.0412	7.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	5.7448	5.7448	3.7000e-004	0.0000	5.7542
Total	**1.4216**	**2.9000e-003**	**0.0412**	**7.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**5.7448**	**5.7448**	**3.7000e-004**	**0.0000**	**5.7542**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2800e-003	2.1800e-003	0.0237	8.0000e-005	9.0700e-003	6.0000e-005	9.1300e-003	2.4100e-003	5.0000e-005	2.4700e-003	0.0000	7.3842	7.3842	1.5000e-004	0.0000	7.3880
Total	**3.2800e-003**	**2.1800e-003**	**0.0237**	**8.0000e-005**	**9.0700e-003**	**6.0000e-005**	**9.1300e-003**	**2.4100e-003**	**5.0000e-005**	**2.4700e-003**	**0.0000**	**7.3842**	**7.3842**	**1.5000e-004**	**0.0000**	**7.3880**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Improve Walkability Design

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3268	1.3883	3.2823	0.0114	0.9909	9.5100e-003	1.0004	0.2659	8.8800e-003	0.2748	0.0000	1,047.0252	1,047.0252	0.0391	0.0000	1,048.0015
Unmitigated	0.3392	1.4640	3.5742	0.0128	1.1235	0.0106	1.1340	0.3015	9.8700e-003	0.3114	0.0000	1,172.9509	1,172.9509	0.0425	0.0000	1,174.0129

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	988.47	988.47	988.47	2,282,978	2,013,586
Day-Care Center	536.40	536.40	536.40	631,679	557,141
Enclosed Parking Structure	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Strip Mall	67.66	67.66	67.66	104,200	91,905
Total	1,592.53	1,592.53	1,592.53	3,018,857	2,662,632

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Day-Care Center	9.50	7.30	7.30	12.70	82.30	5.00	28	58	14
Enclosed Parking Structure	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Condo/Townhouse	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Day-Care Center	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Enclosed Parking Structure	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Parking Lot	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749
Strip Mall	0.578638	0.038775	0.193686	0.110919	0.015677	0.005341	0.018293	0.026358	0.002641	0.002200	0.005832	0.000891	0.000749

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	258.1588	258.1588	0.0228	4.7100e-003	260.1319
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	258.1588	258.1588	0.0228	4.7100e-003	260.1319
NaturalGas Mitigated	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	236.8945	236.8945	4.5400e-003	4.3400e-003	238.3022
NaturalGas Unmitigated	0.0239	0.2050	0.0902	1.3100e-003		0.0165	0.0165		0.0165	0.0165	0.0000	236.8945	236.8945	4.5400e-003	4.3400e-003	238.3022

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	4.29393e+006	0.0232	0.1979	0.0842	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	229.1404	229.1404	4.3900e-003	4.2000e-003	230.5021
Day-Care Center	132551	7.1000e-004	6.5000e-003	5.4600e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0734	7.0734	1.4000e-004	1.3000e-004	7.1154
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	12755.8	7.0000e-005	6.3000e-004	5.3000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6807	0.6807	1.0000e-005	1.0000e-005	0.6847
Total		**0.0239**	**0.2050**	**0.0902**	**1.3000e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**	**0.0000**	**236.8945**	**236.8945**	**4.5400e-003**	**4.3400e-003**	**238.3022**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	4.29393e+006	0.0232	0.1979	0.0842	1.2600e-003		0.0160	0.0160		0.0160	0.0160	0.0000	229.1404	229.1404	4.3900e-003	4.2000e-003	230.5021
Day-Care Center	132551	7.1000e-004	6.5000e-003	5.4600e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0734	7.0734	1.4000e-004	1.3000e-004	7.1154
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	12755.8	7.0000e-005	6.3000e-004	5.3000e-004	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.6807	0.6807	1.0000e-005	1.0000e-005	0.6847
Total		**0.0239**	**0.2050**	**0.0902**	**1.3000e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**	**0.0000**	**236.8945**	**236.8945**	**4.5400e-003**	**4.3400e-003**	**238.3022**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	945119	140.9562	0.0124	2.5700e-003	142.0335
Day-Care Center	35733.1	5.3293	4.7000e-004	1.0000e-004	5.3700
Enclosed Parking Structure	707616	105.5347	9.3100e-003	1.9300e-003	106.3413
Parking Lot	13440	2.0045	1.8000e-004	4.0000e-005	2.0198
Strip Mall	29061	4.3342	3.8000e-004	8.0000e-005	4.3673
Total		**258.1588**	**0.0228**	**4.7200e-003**	**260.1319**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	945119	140.9562	0.0124	2.5700e-003	142.0335
Day-Care Center	35733.1	5.3293	4.7000e-004	1.0000e-004	5.3700
Enclosed Parking Structure	707616	105.5347	9.3100e-003	1.9300e-003	106.3413
Parking Lot	13440	2.0045	1.8000e-004	4.0000e-005	2.0198
Strip Mall	29061	4.3342	3.8000e-004	8.0000e-005	4.3673
Total		**258.1588**	**0.0228**	**4.7200e-003**	**260.1319**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9774	0.0227	1.4103	1.2000e-004		8.3100e-003	8.3100e-003		8.3100e-003	8.3100e-003	0.0000	9.8502	9.8502	2.3700e-003	1.4000e-004	9.9506
Unmitigated	1.4128	0.0263	2.0080	1.2700e-003		0.0936	0.0936		0.0936	0.0936	8.6165	5.8391	14.4555	0.0161	5.7000e-004	15.0257

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1421					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.4361	0.0100	0.6005	1.1900e-003		0.0859	0.0859		0.0859	0.0859	8.6165	3.5392	12.1557	0.0139	5.7000e-004	12.6702
Landscaping	0.0427	0.0162	1.4075	7.0000e-005		7.7800e-003	7.7800e-003		7.7800e-003	7.7800e-003	0.0000	2.2999	2.2999	2.2200e-003	0.0000	2.3555
Total	**1.4128**	**0.0263**	**2.0080**	**1.2600e-003**		**0.0936**	**0.0936**		**0.0936**	**0.0936**	**8.6165**	**5.8391**	**14.4555**	**0.0161**	**5.7000e-004**	**15.0257**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1421					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.7919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.6000e-004	6.5200e-003	2.7700e-003	4.0000e-005		5.3000e-004	5.3000e-004		5.3000e-004	5.3000e-004	0.0000	7.5503	7.5503	1.4000e-004	1.4000e-004	7.5952
Landscaping	0.0427	0.0162	1.4075	7.0000e-005		7.7800e-003	7.7800e-003		7.7800e-003	7.7800e-003	0.0000	2.2999	2.2999	2.2200e-003	0.0000	2.3555
Total	**0.9774**	**0.0227**	**1.4103**	**1.1000e-004**		**8.3100e-003**	**8.3100e-003**		**8.3100e-003**	**8.3100e-003**	**0.0000**	**9.8502**	**9.8502**	**2.3600e-003**	**1.4000e-004**	**9.9506**

7.0 Water Detail

7.1 Mitigation Measures Water

29212 Mission Boulevard Project - Bay Area AQMD Air District, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	20.5372	0.4206	0.0102	34.0924
Unmitigated	20.5372	0.4206	0.0102	34.0924

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.85956	1.4927	1.3000e-004	3.0000e-005	1.5041
Condo/Townhouse	12.3141 / 7.76324	17.8966	0.4025	9.7300e-003	30.8583
Day-Care Center	0.345261 / 0.887814	0.8516	0.0113	2.8000e-004	1.2177
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.205181 / 0.125756	0.2963	6.7100e-003	1.6000e-004	0.5123
Total		**20.5372**	**0.4207**	**0.0102**	**34.0924**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 2.85956	1.4927	1.3000e-004	3.0000e-005	1.5041
Condo/Townhouse	12.3141 / 7.76324	17.8966	0.4025	9.7300e-003	30.8583
Day-Care Center	0.345261 / 0.887814	0.8516	0.0113	2.8000e-004	1.2177
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.205181 / 0.125756	0.2963	6.7100e-003	1.6000e-004	0.5123
Total		**20.5372**	**0.4207**	**0.0102**	**34.0924**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.4067	1.2060	0.0000	50.5567
Unmitigated	20.4067	1.2060	0.0000	50.5567

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.21	0.0426	2.5200e-003	0.0000	0.1056
Condo/Townhouse	86.94	17.6480	1.0430	0.0000	43.7223
Day-Care Center	10.47	2.1253	0.1256	0.0000	5.2654
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	2.91	0.5907	0.0349	0.0000	1.4634
Total		**20.4067**	**1.2060**	**0.0000**	**50.5567**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.21	0.0426	2.5200e-003	0.0000	0.1056
Condo/Townhouse	86.94	17.6480	1.0430	0.0000	43.7223
Day-Care Center	10.47	2.1253	0.1256	0.0000	5.2654
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	2.91	0.5907	0.0349	0.0000	1.4634
Total		**20.4067**	**1.2060**	**0.0000**	**50.5567**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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APPENDIX B

CONSTRUCTION HRA MODEL SNAPSHOTS

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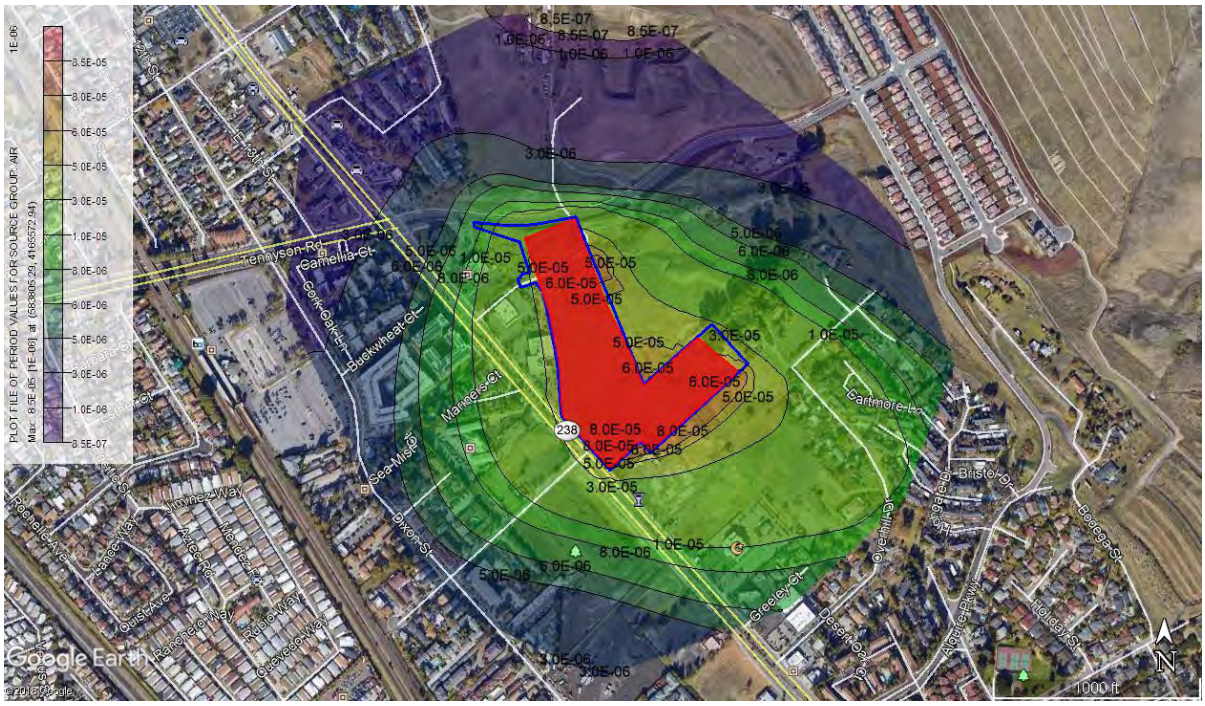
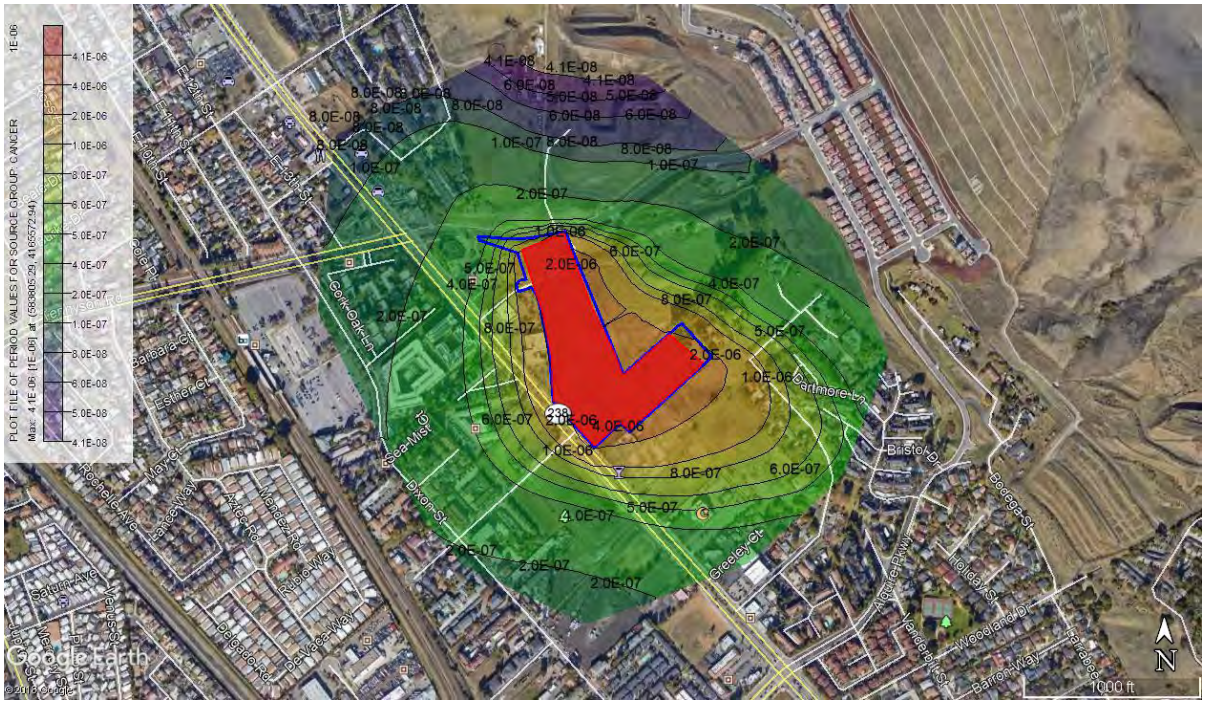
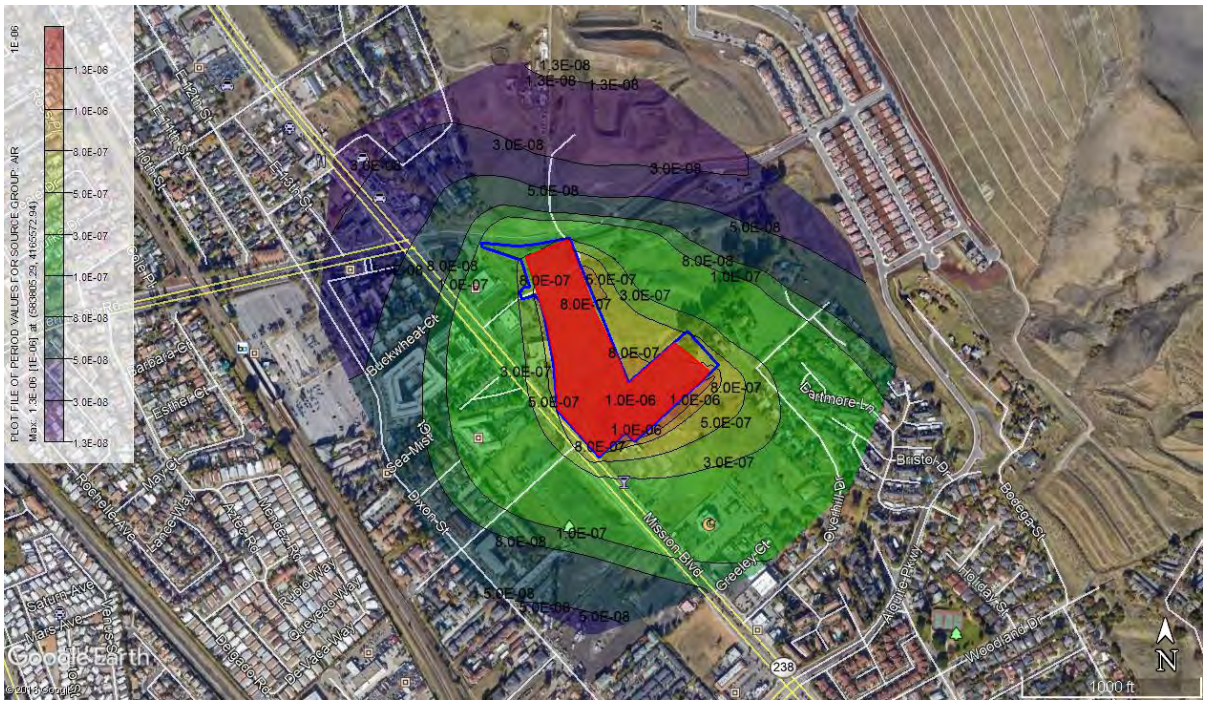
Project Location

Plot Plan

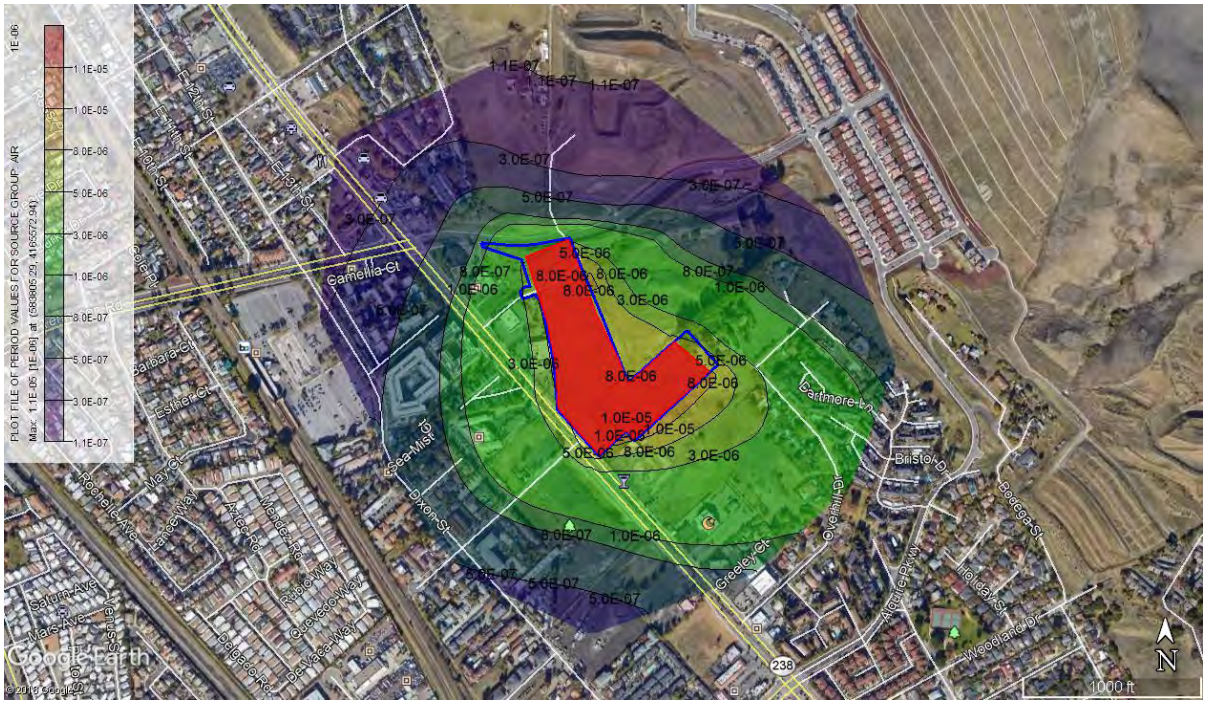
Unmitigated Cancer Risk



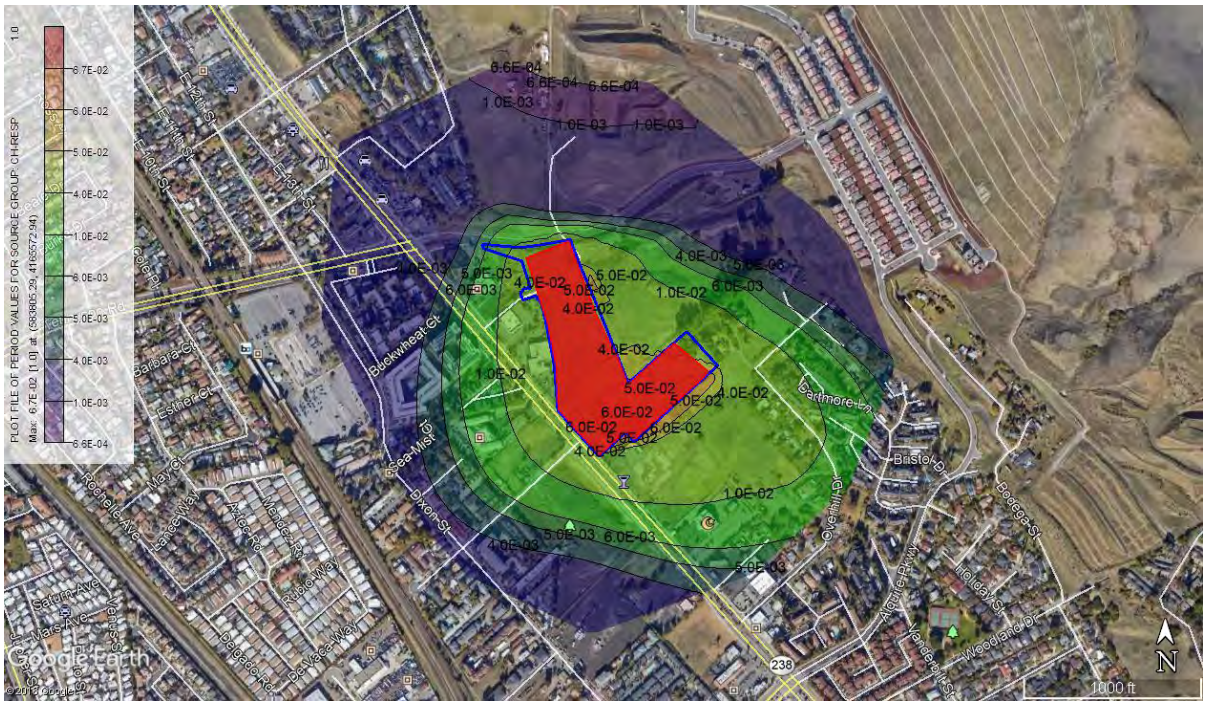




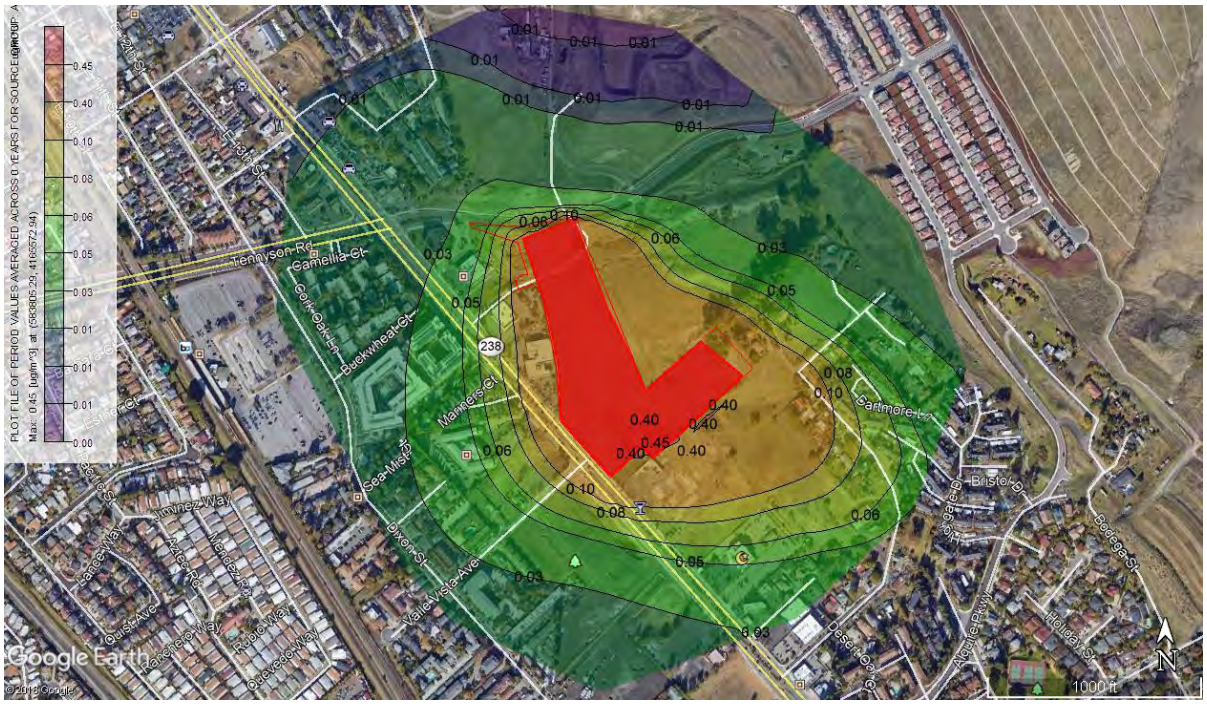
Mitigated Cancer Risk



Chronic Inhalation Hazard Index



$PM_{2.5}$ Concentrations



APPENDIX C

FHWA INPUT-OUTPUT SHEETS

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TABLE Existing No Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Tennyson Road and Harder Road
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32555 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 66.99

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	105.0	218.9	467.9

TABLE Existing No Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Valle Vista Avenue/Project Driveway and Tennyson Road
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 30990 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.18

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
63.6	124.5	262.0	561.4

TABLE Existing No Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Industrial Parkway and Valle Vista Avenue/Project Driveway
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 31820 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.55

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
62.7	125.7	266.2	571.3

TABLE Existing No Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Whipple Road and Industrial Parkway
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27295 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 34 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.40

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
61.7	116.1	241.4	516.0

TABLE Existing No Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11430 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.69

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	56.4	111.0	233.9

TABLE Existing No Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 680 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 48.65

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE Existing No Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Project Driveway
NOTES: 29122 Mission Boulevard - Existing No Project

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* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 680 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 48.65

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE Existing No Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Valle Vista Avenue - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1600 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.36

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE Existing No Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 17490 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.21

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	103.5	217.3	465.4

TABLE Existing No Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6100 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 8 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 57.97

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	90.9

TABLE Existing Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Tennyson Road and Harder Road
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 33035 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.05

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	106.0	221.0	472.5

TABLE Existing Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Valle Vista Avenue/Project Driveway and Tennyson Road
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 31650 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.27

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
64.3	126.1	265.6	569.3

TABLE Existing Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Industrial Parkway and Valle Vista Avenue/Project Driveway
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 32485 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.64

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
63.5	127.4	269.9	579.2

TABLE Existing Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Whipple Road and Industrial Parkway
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 27615 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 34 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.45

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
62.1	116.9	243.3	520.0

TABLE Existing Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 11950 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 62.89

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	57.8	114.2	240.9

TABLE Existing Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1135 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 50.87

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE Existing Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Project Driveway
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 680 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 48.65

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE Existing Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Valle Vista Avenue - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1640 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.47

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE Existing Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 17890 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.30

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	104.9	220.6	472.5

TABLE Existing Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - Existing Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6100 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 8 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 57.97

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	90.9

TABLE 2024 No Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Tennyson Road and Harder Road
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 39389 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.82

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
60.9	118.1	247.9	531.0

TABLE 2024 No Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Valle Vista Avenue/Project Driveway and Tennyson Road
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 37651 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.03

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
70.6	140.8	297.8	639.0

TABLE 2024 No Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Industrial Parkway and Valle Vista Avenue/Project Driveway
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 38622 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.39

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
70.0	142.4	302.6	649.9

TABLE 2024 No Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Whipple Road and Industrial Parkway
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 35082 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 34 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.49

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
69.7	135.5	284.6	609.6

TABLE 2024 No Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 13858 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.53

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	62.6	125.4	265.6

TABLE 2024 No Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 839 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 49.56

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2024 No Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Project Driveway
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 839 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 49.56

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2024 No Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Valle Vista Avenue - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2044 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 53.43

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2024 No Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21306 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.06

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
59.1	117.1	247.4	530.6

TABLE 2024 No Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6319 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 8 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	93.1

TABLE 2024 Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Tennyson Road and Harder Road
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 39871 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 67.87

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
61.3	119.0	249.9	535.3

TABLE 2024 Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Valle Vista Avenue/Project Driveway and Tennyson Road
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 38311 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.10

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
71.2	142.4	301.3	646.4

TABLE 2024 Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Industrial Parkway and Valle Vista Avenue/Project Driveway
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 39287 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.46

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
70.7	143.9	306.1	657.4

TABLE 2024 Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Whipple Road and Industrial Parkway
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 35402 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 34 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.53

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
70.1	136.3	286.3	613.3

TABLE 2024 Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 14378 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 63.69

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	63.9	128.4	272.2

TABLE 2024 Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1294 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.44

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2024 Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Project Driveway
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 839 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 49.56

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2024 Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Valle Vista Avenue - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 2084 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 53.51

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2024 Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 21706 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 68.14

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
59.6	118.5	250.5	537.2

TABLE 2024 Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2024 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6319 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 8 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	93.1

TABLE 2035 No Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Tennyson Road and Harder Road
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 54425 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.22

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
72.3	144.9	306.8	658.3

TABLE 2035 No Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Valle Vista Avenue/Project Driveway and Tennyson Road
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 52305 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.46

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
85.0	173.9	370.1	795.2

TABLE 2035 No Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Industrial Parkway and Valle Vista Avenue/Project Driveway
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 53585 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.81

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
84.9	176.0	375.9	808.3

TABLE 2035 No Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Whipple Road and Industrial Parkway
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 52215 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 34 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.22

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
86.4	174.4	369.9	794.2

TABLE 2035 No Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19200 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 64.95

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	75.4	154.7	329.6

TABLE 2035 No Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1190 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2035 No Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Project Driveway
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1190 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2035 No Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Valle Vista Avenue - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3020 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.12

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	57.0

TABLE 2035 No Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 29700 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.50

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
71.1	144.9	308.1	661.8

TABLE 2035 No Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 No Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6800 SPEED (MPH): 25 GRADE: .5

	TRAFFIC DISTRIBUTION PERCENTAGES DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 8 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.44

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	97.7

TABLE 2035 Project-01
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Tennyson Road and Harder Road
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 54905 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.26

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
72.7	145.7	308.6	662.2

TABLE 2035 Project-02
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Valle Vista Avenue/Project Driveway and Tennyson Road
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 52965 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 30 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.51

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
85.6	175.3	373.2	801.9

TABLE 2035 Project-03
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Industrial Parkway and Valle Vista Avenue/Project Driveway
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 54250 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.86

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
85.5	177.5	379.0	814.9

TABLE 2035 Project-04
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Mission Boulevard - Between Whipple Road and Industrial Parkway
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 52535 SPEED (MPH): 40 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 34 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 70.24

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
86.7	175.0	371.4	797.4

TABLE 2035 Project-05
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 19720 SPEED (MPH): 35 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 65.06

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	76.6	157.4	335.4

TABLE 2035 Project-06
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1645 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 52.48

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2035 Project-07
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Tennyson Road - East of Project Driveway
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 1190 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 51.08

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	0.0

TABLE 2035 Project-08
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Valle Vista Avenue - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 3060 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 6 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 55.18

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	57.5

TABLE 2035 Project-09
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - West of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 30100 SPEED (MPH): 45 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 26 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 69.56

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn			
70 Ldn	65 Ldn	60 Ldn	55 Ldn
71.6	146.1	310.8	667.7

TABLE 2035 Project-10
FHWA ROADWAY NOISE LEVEL ANALYSIS

RUN DATE: 08/09/2019
ROADWAY SEGMENT: Industrial Parkway - East of Mission Boulevard
NOTES: 29122 Mission Boulevard - 2035 Project

---

* * ASSUMPTIONS * *

AVERAGE DAILY TRAFFIC: 6800 SPEED (MPH): 25 GRADE: .5

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	NIGHT
AUTOS	88.08	9.34
M-TRUCKS	1.65	0.19
H-TRUCKS	0.66	0.08

ACTIVE HALF-WIDTH (FT): 8 SITE CHARACTERISTICS: SOFT

---

* * CALCULATED NOISE LEVELS * *

Ldn AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE (dB) = 58.44

DISTANCE (FEET) FROM ROADWAY CENTERLINE TO Ldn

70 Ldn	65 Ldn	60 Ldn	55 Ldn
0.0	0.0	0.0	97.7

APPENDIX D

INSUL PRINTOUTS

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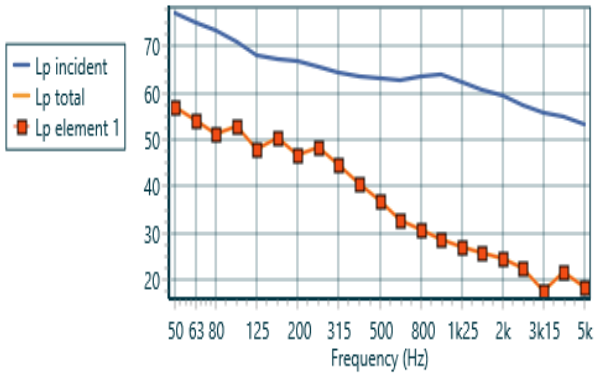
Outdoor To Indoor Sound Transmission (v9.0.20)

ATTACHMENT VI

Margin of error is generally within STC ±3 dB
- Key No. 4862
Job Name:
Job No.: Initials:JStephens
Date:8/14/2019
File Name:

Comment:



Source	Octave Band Centre Frequency (Hz)																				Overall dBA
	63		125		250		500		1k		2k		4k								
Incident sound level (freefield)	77.0	75.0	73.3	70.9	67.9	67.2	66.7	65.4	64.4	63.6	63.0	62.7	63.6	63.8	62.2	60.8	59.6	57.5	55.6	54.8	53.3	72
Path																					
Element 1 , STL	-23	-24	-25	-21	-23	-20	-23	-20	-23	-26	-29	-33	-36	-38	-38	-38	-38	-38	-41	-36	-38	
Facade Shape factor Level diff.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Insertion Loss	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Area(+10LogA) [123 ft2]	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	
Element sound level contribution	57	54	51	53	48	50	47	48	44	41	37	33	31	29	27	26	25	23	18	22	18	46
Receiver																					
Room volume(-10LogV) [1230 ft3]	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	-31	
Reverberation time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
RT (+10LogT)	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	
Equation Constant	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	
Room sound level	57	54	51	53	48	50	47	48	44	41	37	33	31	29	27	26	25	23	18	22	18	46

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APPENDIX E

TRANSPORTATION IMPACT ANALYSIS

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TRAFFIC IMPACT ANALYSIS

29212 MISSION BOULEVARD

HAYWARD, CALIFORNIA

LSA

September 2019

TRAFFIC IMPACT ANALYSIS

29212 MISSION BOULEVARD

HAYWARD, CALIFORNIA

Submitted to:

City of Hayward
Planning Division
777 B Street
Hayward, California 94541

Prepared by:

LSA
20 Executive Park, Suite 200
Irvine, California 92614
(949) 553-0666

Project No. HAY1701.06

LSA

September 2019

EXECUTIVE SUMMARY

LSA has prepared this Traffic Impact Analysis (TIA) to identify the potential impacts resulting from the development of the proposed mixed-use project at 29212 Mission Boulevard. The proposed project includes 189 multifamily units, an 8,048-square-foot (sf) day care center, and 2,773 sf of retail use. This TIA was prepared in accordance with the City of Hayward (City) *Interim Traffic Study Guidelines* (adopted in March 2017) and the California Environmental Quality Act (CEQA).

The project is located east of Mission Boulevard and south of Tennyson Road in Hayward, California. Access to the project site will be provided via a new driveway on Mission Boulevard that would create the fourth leg of the currently three-legged intersection of Mission Boulevard/Valle Vista Avenue.

This TIA analyzes the a.m. and p.m. peak-hour intersection levels of service (LOS) during a typical weekday. Project impacts were determined based on the analysis of the following conditions, consistent with the City's requirements:

1. Existing (2019)
2. Existing Plus Project
3. Background (2024; 5-year interpolation between Existing [2019] conditions and Cumulative [2035] model runs using the Hayward General Plan Update Travel Demand Model)
4. Background Plus Project
5. Cumulative (2035; based on the Hayward General Plan Update Travel Demand Model)
6. Cumulative Plus Project

In addition, an alternative Cumulative analysis was conducted to evaluate the project's impact based on two Interstate 880 (I-880) interchange improvements being proposed by the Alameda County Transportation Commission (ACTC). Located at the intersection of the I-880 Southbound Ramps/Industrial Parkway, the two proposed improvement alternatives would reconfigure the intersection geometry, with Alternative 1 being analyzed with loop-on and slip-on ramps (partial cloverleaf interchange) and Alternative 2 with a diamond interchange configuration.

Based on the results of this TIA, the proposed project would cause a significant impact to the intersection of Ruus Road/Industrial Parkway West in the Cumulative Plus I-880 Improvement Plus Project conditions per the City's performance criteria. The intersections are forecast to operate at LOS F without the project under the Cumulative condition. The project would increase the deficient delays by more than 5 seconds, resulting in significant Cumulative impacts. Based on the City's project contribution calculations for significant impacts, the project would contribute 0.81 percent and 0.63 percent of the traffic in the a.m. and p.m. peak hours respectively. LSA recommends adjusting the signal timing splits to allow more green time for the impacted approaches at this intersection, resulting in improvements to offset the project's impacts. It should be noted that the overall signal cycle lengths would not be modified, thereby maintaining the existing signal coordination and offsets at the respective intersections.

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LIST OF ABBREVIATIONS AND ACRONYMS

AC Transit	Alameda-Contra Costa Transit District
ACTC	Alameda County Transportation Commission
BART	Bay Area Rapid Transit
CAMUTCD	California Manual on Uniform Traffic Control Devices
CEQA	California Environmental Quality Act
City	City of Hayward
ft	foot/feet
HCM	Highway Capacity Manual
I-880	Interstate 880
ITE	Institute of Transportation Engineers
LOS	level(s) of service
mph	miles per hour
NCHRP	National Cooperative Highway Research Program
project	29212 Mission Boulevard
sf	square foot/feet
SR-238	State Route 238
TIA	Traffic Impact Analysis
TRB	Transportation Research Board

INTRODUCTION

The purpose of this Traffic Impact Analysis (TIA) is to determine the potential impacts resulting from the proposed mixed-use development of 189 multifamily units, an 8,048-square-foot (sf) day care center, and 2,773 sf of retail use at 29212 Mission Boulevard in Hayward, California. Figure 1 shows the location of the project site and the study area intersections.

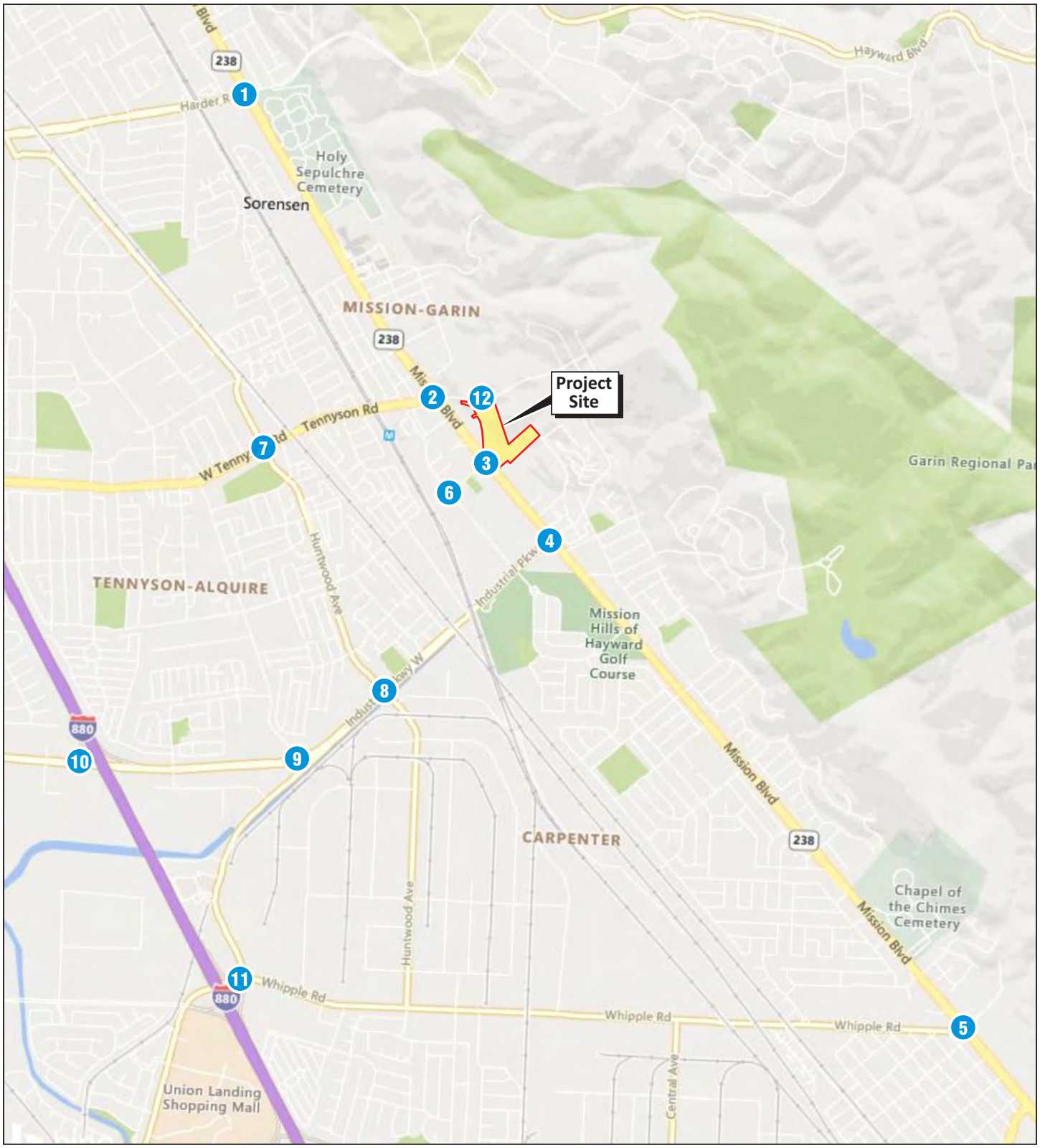
LSA prepared the TIA based on the City of Hayward's (City) *Interim Traffic Study Guidelines* (2017). Issues addressed in this analysis include the operation of the existing roadway system in the area, local off-site intersection impacts, site access, and internal circulation. The TIA examines the following six conditions:

1. **Existing (2019)—**This condition evaluates the study intersections based on existing traffic controls, lane geometry, and traffic counts.
2. **Existing Plus Project—**This condition evaluates the study intersections based on the Existing (2019) condition with the addition of traffic generated by the proposed project.
3. **Background (2024)—**This condition evaluates the study intersections based on a 5-year interpolation between Existing (2019) conditions and Cumulative (2035) model runs using the Hayward General Plan Update Travel Demand Model. The SR-238 Phase 2 project is currently underway and LSA has reviewed the construction plans; there are no changes to the roadway configuration at the study intersections.
4. **Background Plus Project—**This condition evaluates the study intersections based on the Background (2024) condition with the addition of traffic generated by the proposed project.
5. **Cumulative (2035)—**This condition evaluates the study intersections based on a 2035 future-year projection of traffic conditions. The Hayward General Plan Update Travel Demand Model is used to develop regional traffic growth and traffic generated by the development build out in Hayward in this condition.
6. **Cumulative Plus Project—**This condition evaluates the study intersections based on the Cumulative (2035) condition with the addition of traffic generated by the proposed project.

In addition, an alternative Cumulative analysis was conducted to evaluate the project's impact based on two Interstate 880 (I-880) interchange improvements being proposed by the Alameda County Transportation Commission (ACTC). Located at the intersection of the I-880 Southbound Ramps/ Industrial Parkway, the two proposed improvement alternatives would reconfigure the intersection geometry, with Alternative 1 being analyzed with loop-on and slip-on ramps (partial cloverleaf interchange) and Alternative 2 with a diamond interchange configuration.

Project Description

The proposed project considers the development of 189 multifamily units, an 8,048 sf day care center, and 2,773 sf of retail use on the project site. The project site is comprised of two parcels of approximately 8.4 and 4.66 acres in size. Parcel 1 is on the southern portion of the project site and generally slopes upward to the east from the lowest and flattest area of the Mission Boulevard frontage. Parcel 2, the larger of the two parcels, slopes from the western boundary of the site adjacent to Parcel 1 to the eastern boundary fronting Tennyson Road.



LSA

FIGURE 1

LEGEND

- Study Area Intersection

N

0 1250 2500

FEET

SOURCE: Bing Maps

29212 Mission Boulevard Project
Project Location and
Study Area Intersections

I:\HAY1701.06\G\Traffic\Location&Ints.cdr (6/12/2019)

The project site is bounded by Tennyson Road to the north, vacant land and open space to the south and east, and automotive (Infinitude auto sales and service), office (United Food and Commercial Workers labor union and COIT Cleaning and Restoration Services), and retail (Kelly Moore Paints and Saudagar Cash & Carry) uses to the west.

Figure 2 shows the site plan for the proposed project. The proposed project includes two mixed-use buildings and 23 townhome buildings. Buildings A and B would be located along Mission Boulevard, and the townhome units would be located to the east of the mixed-use buildings. Building A would be located on the southwest portion of Parcel 2. Building A would consist of 45 residential units, 24 of which would include two-bedrooms and 21 of which would include three-bedrooms, all ranging in size from approximately 1,127 sf to 1,710 sf. Building B would be located south of Building A on Parcel 1. Building B would consist of 21 residential units, 9 of which would be two-bedroom units, and 12 of which would be three-bedroom units, with the same size range as Building A. In addition, Building A would include 8,048 sf of ground floor commercial area (assumed as a daycare), and Building B would include one 2,773 sf commercial space (assumed as general retail use), for a total of 10,821 sf of commercial area on the project site. All commercial uses would be located on the ground level.

The townhome buildings would range in size from approximately 8,516 sf to 13,356 sf. Of the 23 proposed buildings, one building would include seven units, 14 buildings would include six units each, and eight buildings would include four units each, for a total of 123 units. The townhome units would range in size from 1,548 sf to 1,970 sf and would consist of 116 three-bedroom units and seven four-bedroom units.

Access to the project site will be provided via a new signalized full-access driveway on Mission Boulevard. This project driveway will create the fourth leg of the currently three-legged intersection of Mission Boulevard/Valle Vista Avenue. A new one-way stop, unsignalized full-access driveway will also be provided on Tennyson Road.

METHODOLOGY

This TIA is consistent with the objectives and methodologies set forth in the City's *Interim Traffic Study Guidelines* (City of Hayward 2017) and applicable provisions of CEQA. The City Traffic Engineer reviewed and approved the scope of work, including the project study area, prior to the preparation of this TIA.

Highway Capacity Manual Intersection Methodology

In accordance with the City's guidelines, LSA used the *Highway Capacity Manual,* 2000 Edition (HCM) (TRB 2010) methodology using the Synchro (Version 10) software to determine intersection levels of service (LOS) at the signalized and unsignalized study area intersections. The HCM analysis was also used to evaluate potential queuing for all exclusive turning movements and compared to the existing available storage.

FIGURE 2

LSA

Note: Building A includes 8,048 square feet of day care use.
Building B includes 2,773 square feet of retail use.

N

0 90 180
FEET

SOURCE: R3 Studios (July 2019)

29212 Mission Boulevard Project
Site Plan

\\vcorp12\images\HAY1701.06\G\Traffic\Site Plan.cdr (9/6/2019)

The HCM signalized intersection methodology presents LOS in terms of control delay (in seconds per vehicle). The HCM unsignalized intersection methodology presents LOS in terms of total intersection delay and approach delay of the major and minor streets (in seconds per vehicle). The resulting delay is expressed in terms of LOS.

LOS is a qualitative assessment of the quantitative effects of such factors as traffic volume, roadway geometrics, speed, delay, and maneuverability on roadway and intersection operations.

LOS is assigned along the following letter gradient where LOS A represents free-flow activity and LOS F represents overcapacity operation:

LOS	Description
A	No approach phase is fully utilized by traffic, and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are nearing full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. This level represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is attained no matter how great the demand.
F	This level describes forced-flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially, and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, speed can drop to zero.

LOS = level of service

The relationship between LOS and the delay (in seconds) at signalized and unsignalized intersections is as follows:

Levels of Service	Signalized Intersection Delay (seconds)	Unsignalized Intersection Delay (seconds)
A	≤10.0	≤10.0
B	>10.0 and ≤20.0	>10.0 and ≤15.0
C	>20.0 and ≤35.0	>15.0 and ≤25.0
D	>35.0 and ≤55.0	>25.0 and ≤35.0
E	>55.0 and ≤80.0	>35.0 and ≤50.0
F	>80.0	>50.0

Note: Unsignalized intersection delay for all-way stop control is measured as the average delay. For one-way/two-way stop control intersections, the delay from the worst-performing movement is used.
Source: *Highway Capacity Manual* (Transportation Research Board 2010).

Significance Criteria

The City considers LOS E (80 seconds of delay) as the upper limit of satisfactory operations at signalized intersections. Per the City General Plan Goal M-4.3:

> "The City shall maintain a minimum vehicle level of service (LOS) E at signalized intersections during the peak commute periods except when a LOS F may be acceptable due to costs of mitigation or when there would be other unacceptable impacts, such as right-of-way acquisition or degradation of the pedestrian environment due to increased crossing distances or unacceptable crossing delays."

Per the City's *Interim Traffic Study Guidelines*, a potentially significant project impact would occur at a signalized or unsignalized intersection if:

> "The intersection operates at Level of Service F without the project under Existing or Cumulative conditions and the addition of the project under Existing Plus Project or Cumulative Plus Project conditions results in an increase in the average control delay of 5.0 seconds or greater when compared to the associated no project condition."

Study Intersections

The project study area includes the following 12 intersections per the City Traffic Engineer:

1. Mission Boulevard (State Route 238 [SR-238])/Harder Road (*signalized*)
2. Mission Boulevard (SR-238)/Tennyson Road (*signalized*)
3. Mission Boulevard (SR-238)/Valle Vista Avenue–Project Driveway (*signalized*)
4. Mission Boulevard (SR-238)/Industrial Parkway West (*signalized*)
5. Mission Boulevard (SR-238)/Whipple Road (*signalized*)
6. Dixon Street/Valle Vista Avenue (*all-way stop control*)
7. Huntwood Avenue/Tennyson Road (*signalized*)
8. Huntwood Avenue/Industrial Parkway West (*signalized*)
9. Ruus Road–Industrial Parkway SW/Industrial Parkway West (*signalized*)
10. I-880 Southbound Ramps/Industrial Parkway West (*signalized*)
11. I-880 Northbound Ramps–Industrial Parkway Southwest/Whipple Road (*signalized*)
12. Project Driveway/Tennyson Road (*one-way stop control*)

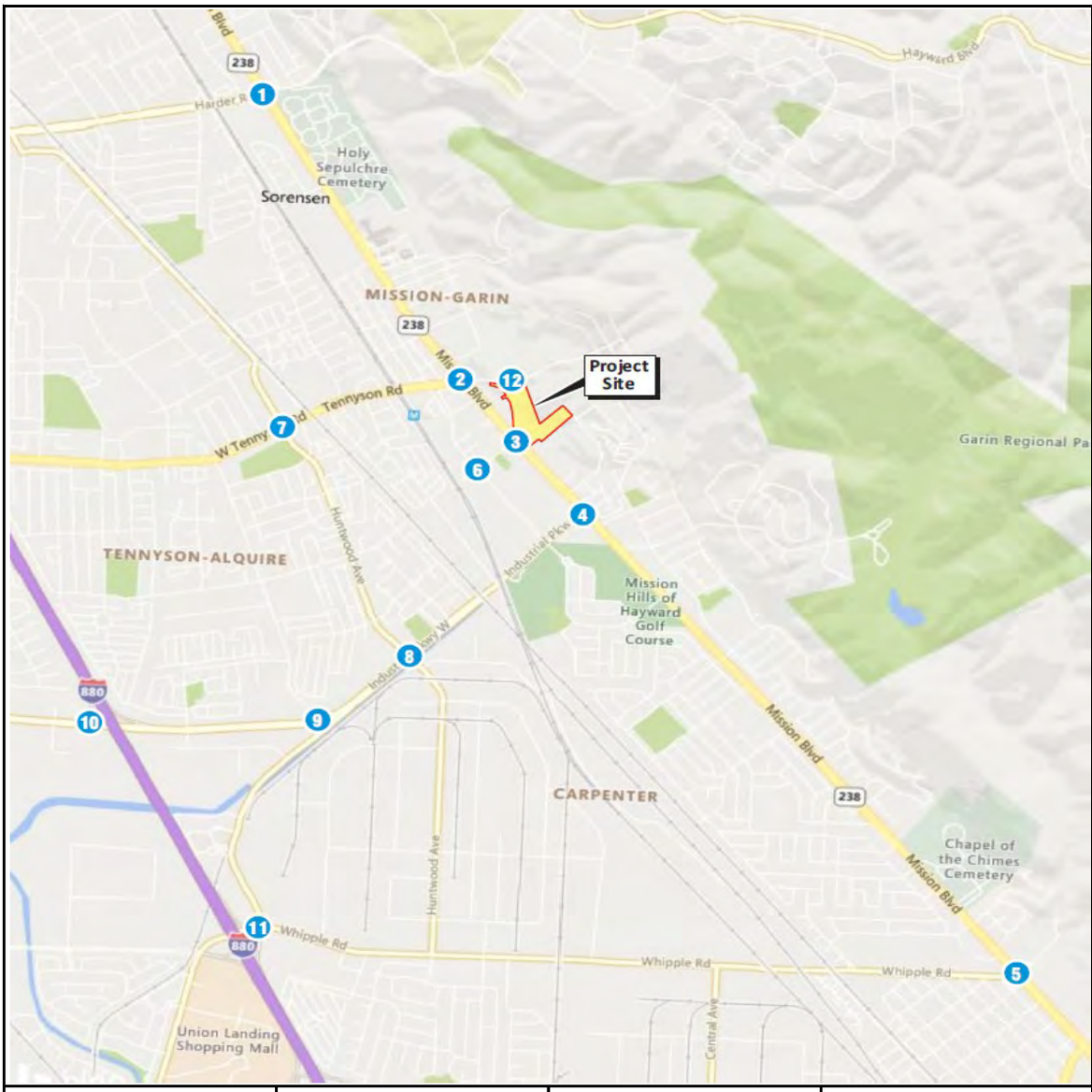
Figure 3 provides the existing geometrics and traffic control devices at the study intersections.

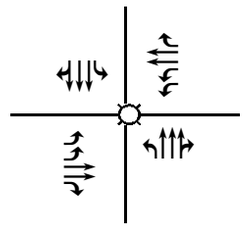
EXISTING CONDITIONS

Existing Circulation System

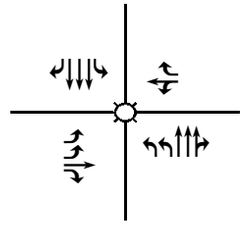
Key roadways in the vicinity of the proposed project are as follows:

- **Mission Boulevard:** The City's General Plan Mobility Element (2014) classifies Mission Boulevard as an Arterial. Mission Boulevard is a four-lane north-south roadway located south and southwest of the project site. Direct project access will be provided via a new signalized full-access driveway that will create the fourth leg of the currently three-legged intersection of Mission Boulevard/Valle Vista Avenue. The posted speed limit is 40 miles per hour (mph). On-street (Class II) bicycle lanes are provided south of the intersection of Industrial Parkway-Alquire Parkway. Sidewalks are provided on both sides of the street in the project vicinity. On-street parking is permitted in select locations in the project vicinity.

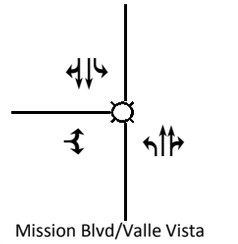




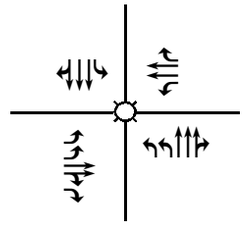
1 Mission Blvd/Harder Rd



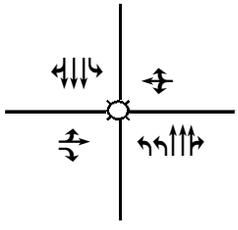
2 Mission Blvd/Tennyson Rd



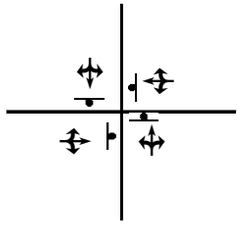
3 Mission Blvd/Valle Vista Ave–Project Dwy



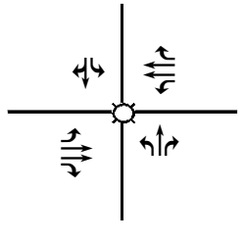
4 Mission Blvd/Industrial Pkwy W



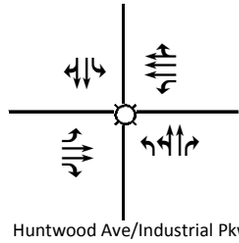
5 Mission Blvd/Whipple Rd



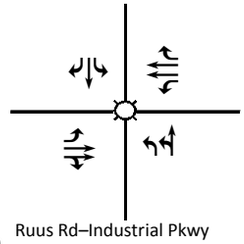
6 Dixon St/Valle Vista Ave



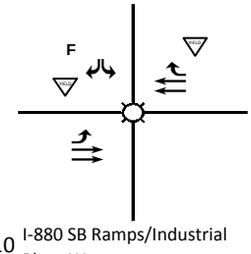
7 Huntwood Ave/Tennyson Rd



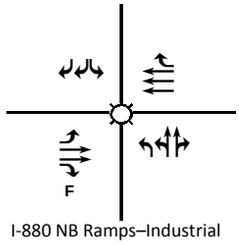
8 Huntwood Ave/Industrial Pkwy W



9 Ruus Rd–Industrial Pkwy SW/Industrial Pkwy W



10 I-880 SB Ramps/Industrial Pkwy W



11 I-880 NB Ramps–Industrial Pkwy SW/Whipple Rd

12 Project Dwy/Tennyson Rd

Future Intersection

LSA

FIGURE 3

LEGEND

Signal
Stop Sign
F Free Right Turn
Yield

29212 Mission Boulevard
Existing Intersection Geometry

- **Huntwood Avenue:** The City's General Plan Mobility Element classifies Huntwood Avenue as a Collector. Huntwood Avenue is a four-lane north-south roadway located south and southwest of the project site. The posted speed limit is 25 to 30 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the project vicinity. On-street parking is permitted in select locations north of Tennyson Avenue.

- **Whipple Road:** The City's General Plan Mobility Element classifies Whipple Road as an Arterial. Whipple Road is a two-to-four-lane east-west roadway located south of the project site. The posted speed limit is 30–40 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the project vicinity. On-street parking is permitted in select locations.

- **Industrial Parkway West/Southwest:** The City's General Plan Mobility Element classifies Industrial Parkway West/Southwest as a Collector. Industrial Parkway West is a four-lane east-west roadway, and becomes a north-south roadway at Industrial Parkway Southwest. Industrial Parkway West/Southwest is located south and southwest of the project site. The posted speed limit is 45 mph. Sidewalks are provided on both sides of the street in the project vicinity. On-street parking is permitted in select locations in the project vicinity.

- **Tennyson Road:** The City's General Plan Mobility Element classifies Tennyson Road as an Arterial. Tennyson Road is a two-lane and a four-lane roadway east and west of Mission Boulevard, respectively. It is an east-west roadway located north and northwest of the project site. Direct project access will be provided via a new unsignalized full-access driveway along Tennyson Road. The posted speed limit is 35 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street. There is no sidewalk on the south side of Tennyson Road east of Mission Boulevard. On-street parking is permitted on Tennyson Road west of Mission Boulevard.

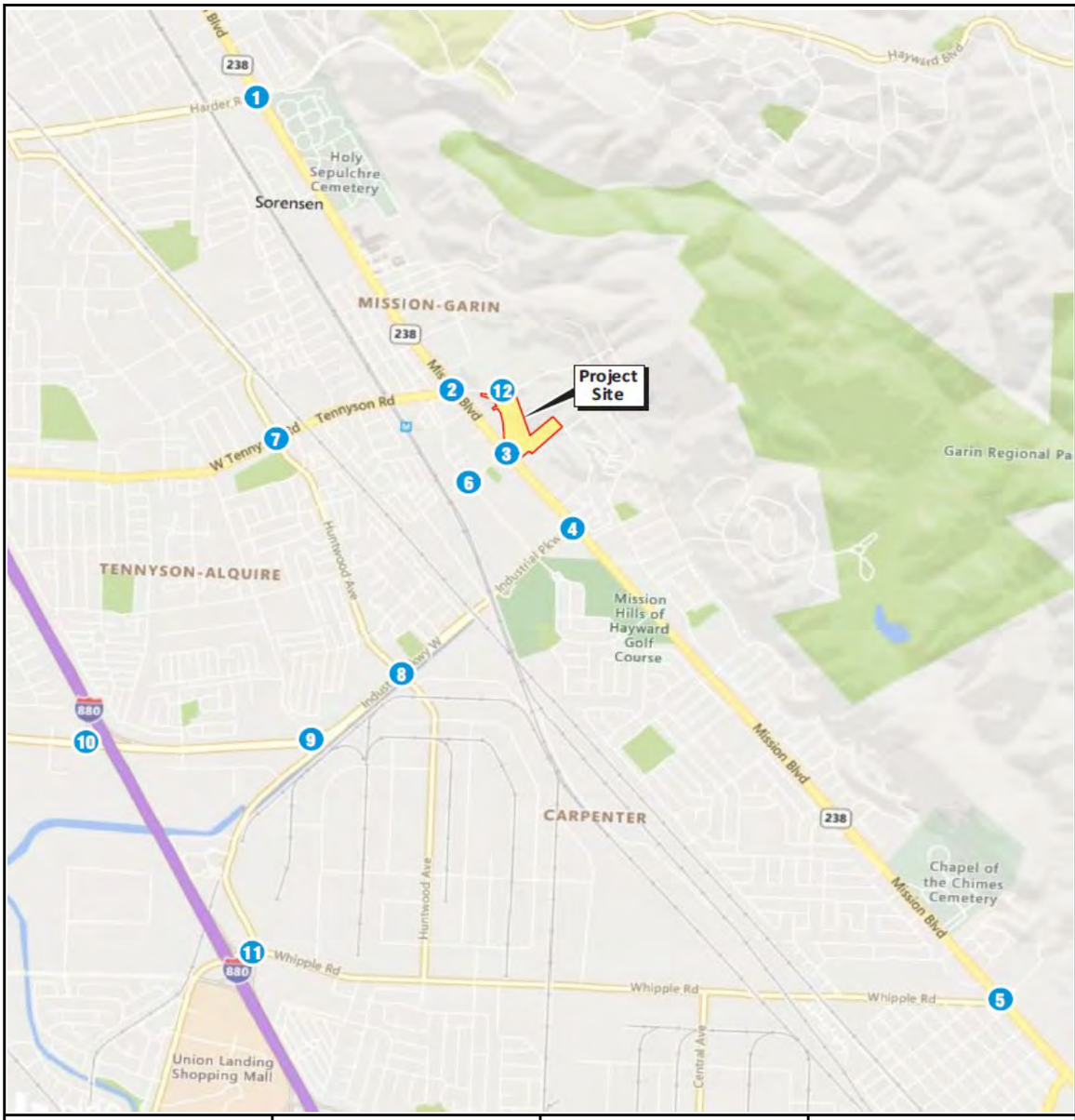
- **Harder Road:** The City's General Plan Mobility Element classifies Harder Road as a Collector. Harder Road is a four-lane east-west roadway located north and northwest of the project site. The posted speed limit is 35 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the project vicinity. On-street parking is permitted in select locations.

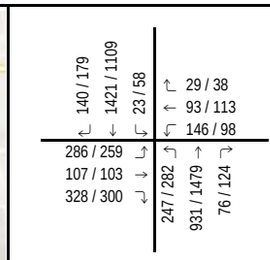
Existing Traffic Volumes

Counts Unlimited collected weekday a.m. and p.m. peak-hour counts for the study intersections in May 2019. Figure 4 presents the existing a.m. and p.m. peak-hour volumes for the study area intersections. Appendix A provides the existing count data and signal timing sheets.

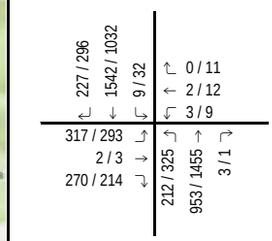
Existing Intersection Level of Service Analysis

Table A summarizes the results of the existing a.m. and p.m. peak-hour LOS analysis for the study area intersections using the HCM methodology. Appendix B provides the existing LOS calculation worksheets. As Table A indicates, the study area intersections operate at acceptable LOS (LOS E or better) during the a.m. and p.m. peak hours, with the exception of Industrial Parkway Southwest/ Whipple Avenue (LOS F) in the p.m. peak hour.

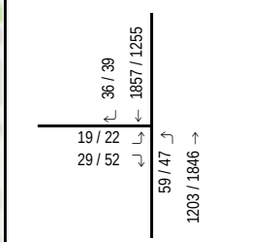




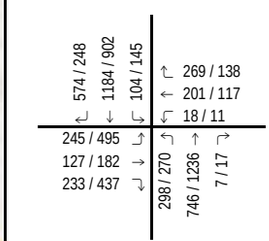
1 Mission Blvd/Harder Rd



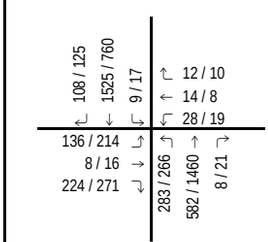
2 Mission Blvd/Tennyson Rd



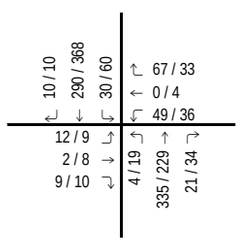
3 Mission Blvd/Valle Vista Ave–Project Dwy



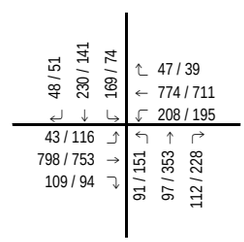
4 Mission Blvd/Industrial Pkwy W



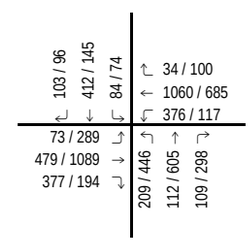
5 Mission Blvd/Whipple Rd



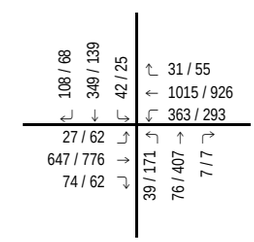
6 Dixon St/Valle Vista Ave



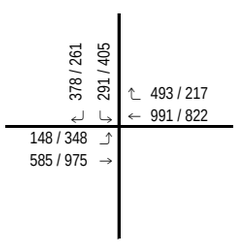
7 Huntwood Ave/Tennyson Rd



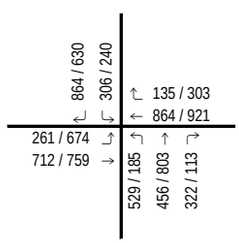
8 Huntwood Ave/Industrial Pkwy W



9 Ruus Rd–Industrial Pkwy SW/Industrial Pkwy W



10 I-880 SB Ramps/Industrial Pkwy W



11 I-880 NB Ramps–Industrial Pkwy SW/Whipple Rd

12 Project Dwy/Tennyson Rd

Future Intersection

LSA

FIGURE 4

LEGEND

XXX / YYY AM / PM Volume

29212 Mission Boulevard

Existing Peak-Hour Volumes

Table A: Existing Intersection Level of Service Summary

No.	Study Intersection	Control	Peak Hour	Approach	Delay	LOS
1	Mission Boulevard (SR-238)/Harder Road	Signal	AM	–	36.6	D
			PM	–	37.4	D
2	Mission Boulevard (SR-238)/Tennyson Road	Signal	AM	–	23.1	C
			PM	–	25.3	C
3	Mission Boulevard (SR-238)/Valle Vista Avenue	Signal	AM	–	8.4	A
			PM	–	6.2	A
4	Mission Boulevard (SR-238)/Industrial Parkway West	Signal	AM	–	29.8	C
			PM	–	28.7	C
5	Mission Boulevard (SR-238)/Whipple Road	Signal	AM	–	19.8	B
			PM	–	17.5	B
6	Dixon Street/Valle Vista Avenue	AWSC	AM	NB	12.3	B
			PM	SB	12.9	B
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	29.8	C
			PM	–	31.9	C
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	47.2	D
			PM	–	48.4	D
9	Ruus Road/Industrial Parkway West	Signal	AM	–	25.0	C
			PM	–	20.7	C
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	23.9	C
			PM	–	28.6	C
11	Industrial Parkway Southwest/Whipple Avenue	Signal	AM	–	49.4	D
			PM	–	>80.0	F
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*			

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
I-880 = Interstate 880
AWSC = all-way stop control
LOS = level of service
NB = northbound
SB = southbound
SR-238 = State Route 238

Transit Facilities and Services

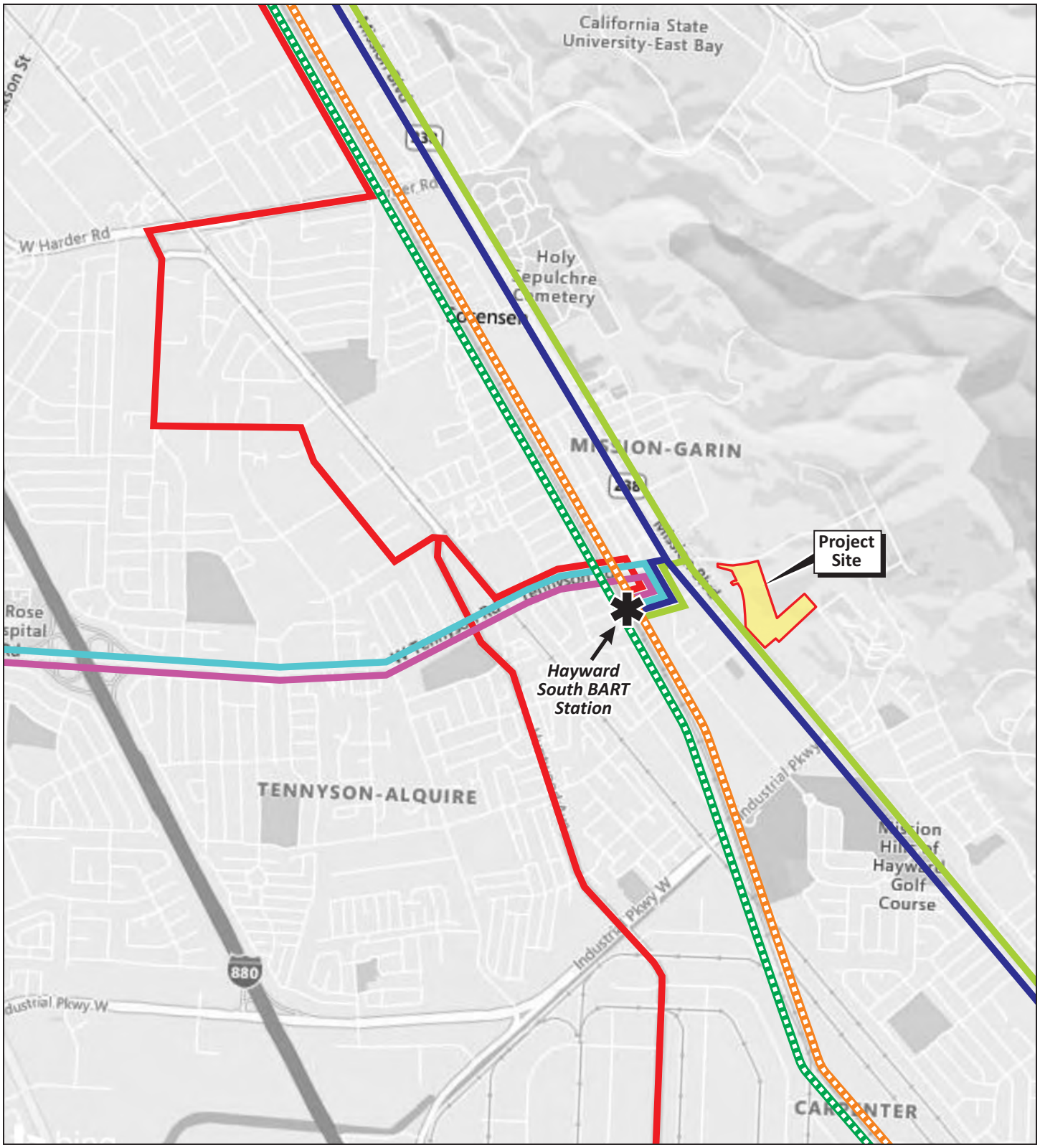
The Alameda-Contra Costa Transit District (AC Transit) provides fixed-route bus service and the Bay Area Rapid Transit (BART) provides rail service in the project vicinity. AC Transit Lines 41, 83, 86, 99, and 801 provide access to regional BART stations, including the South Hayward, Bay Fair, Hayward, and Union City BART stations. The South Hayward BART station is located half a mile west of the project site.

There are two bus stops in the immediate project vicinity. Bus stops are located along Mission Boulevard west of the project site. Existing sidewalks along Mission Boulevard provide pedestrian access to these bus stops. Figure 5 shows the existing transit facilities in the project vicinity.

Bicycle and Pedestrian Facilities

LSA reviewed the existing bicycle and pedestrian system within the project area. Three types of bikeways are identified in the City's Bicycle Master Plan (2007):

- **Class I Bikeway.** A Class I bikeway ("bike path") provides bicycle travel on paved right-of-way completely separated from any street or highway.



LSA

FIGURE 5

AC TRANSIT
- Line 41
- Line 83
- Line 86
- Line 99
- Line 801

BART
- Green Line
- Orange Line

N

0 1000 2000
FEET

SOURCE: Bing Maps

29212 Mission Boulevard Project
Transit Routes

I:\HAY1701.06\G\Traffic\Transit Routes.cdr (6/12/2019)

- **Class II Bikeway.** A Class II bikeway ("bike lane") provides a striped and stenciled lane for one-way travel on a street or highway.
- **Class III Bikeway.** A Class III bikeway ("bike route") provides for shared use with motor vehicle traffic and is identified only by signage.

Mission Boulevard has a Class II bike lane south of Industrial Parkway. There are currently Class II bike lanes on Huntwood Avenue, Whipple Road, Tennyson Road, and Harder Road. In the project vicinity, there are sidewalks on both sides of Mission Boulevard. Adjacent to the project site, there are marked crosswalks on the south and west legs of the intersection of Mission Boulevard/Valle Vista Avenue. As shown on Figure 6, these facilities provide opportunities for the public to use alternative modes of transportation to a variety of commercial, residential, and employment destinations.

BACKGROUND CONDITIONS

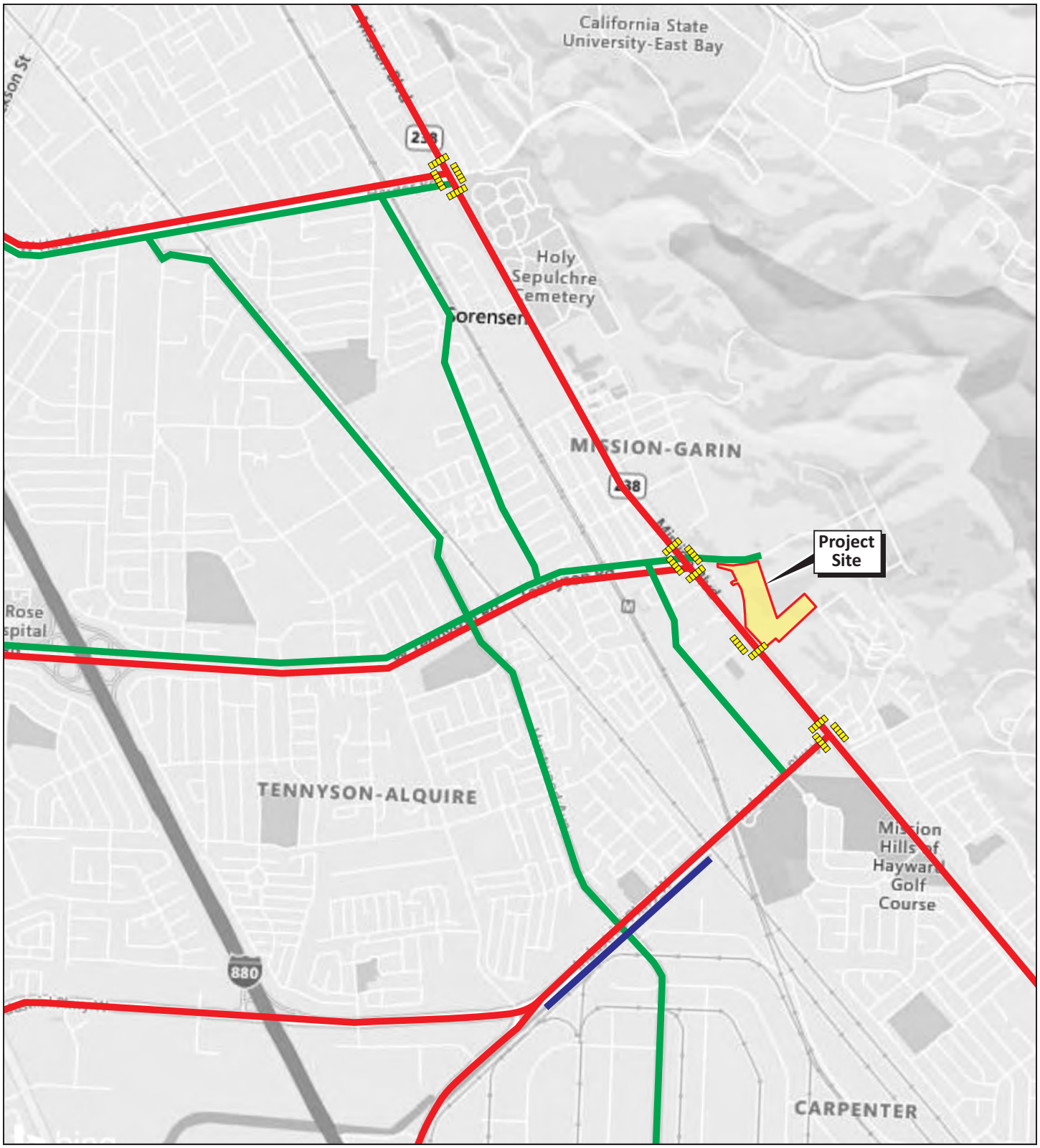
LSA prepared future traffic forecasts (provided in Appendix C) for Cumulative (2035) conditions using the long-range traffic modeling tool, the Hayward General Plan Update Travel Demand Model. This travel demand model is derived from the Alameda Countywide Travel Demand Model that provides more specific land use and network information for Alameda County.

The intersection traffic volumes for Cumulative conditions were developed using base year (2009) and future year (2035) networks. Raw traffic model data from the Hayward General Plan Update Travel Demand Model base and future year model runs were post-processed using the Transportation Research Board's (TRB) National Cooperative Highway Research Program (NCHRP) Report 255 (2016) methodologies to develop peak-hour turning movement volumes at each study area intersection.

The following describes the methodology used to post-process model volumes to develop peak-hour intersection volumes for Cumulative conditions:

1. The difference between the modeled 2009 and 2035 peak-hour directional arterial traffic volumes (for each intersection approach and departure) was identified from loaded network plots. This difference defines growth in traffic over the 26-year period.
2. The incremental growth in approach and departure volumes between 2009 and 2035 was factored to reflect the forecasted growth between the year of the existing traffic data (2019) and 2035. For this purpose, linear growth between the 2009 base condition and the forecasted 2035 condition was assumed.
3. The forecasted growth in approach and departure volumes through Cumulative conditions was added to the existing 2019 traffic data, resulting in "post-processed" Cumulative link volumes.
4. Cumulative turn volumes were developed using existing (2019) turn volumes and the future approach and departure volumes, based on the methodologies contained in the TRB NCHRP Report 255.

LSA reviewed the SR-238 Phase 2 project and found no proposed lane configurations that would alter the existing intersection geometries at the study intersections in the Background condition.



LSA

FIGURE 6

LEGEND

- Class I Bike Lane
- Class II Bike Lane
- Sidewalk
- Crosswalk

N

0 1000 2000

FEET

SOURCE: Bing Maps

29212 Mission Boulevard Project

Existing Bicycle and Pedestrian Facilities

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To develop the future traffic forecasts for the Background (2024) condition (provided in Appendix D), a 5-year interpolation between the Existing (2019) condition and long-range Cumulative (2035) traffic model forecasts was conducted. Traffic volume forecasting for the Background condition was performed consistent with the TRB NCHRP Report 255. Figure 7 illustrates the Background traffic volumes.

Table B summarizes the results of the Background a.m. and p.m. peak-hour LOS analysis for the study area intersections using the HCM methodology. Appendix E provides the Background LOS calculation worksheets. As Table B indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours, with the exception of Ruus Road/Industrial Parkway West (LOS F) in the a.m. and p.m. peak hours and Industrial Parkway Southwest/Whipple Avenue (LOS F) in the a.m. and p.m. peak hours.

CUMULATIVE CONDITIONS

LSA prepared future traffic forecasts (provided in Appendix C) for the Cumulative (2035) condition using the Hayward General Plan Update Travel Demand Model. The model includes pending and approved projects in the project area. Figure 8 illustrates the Cumulative traffic volumes.

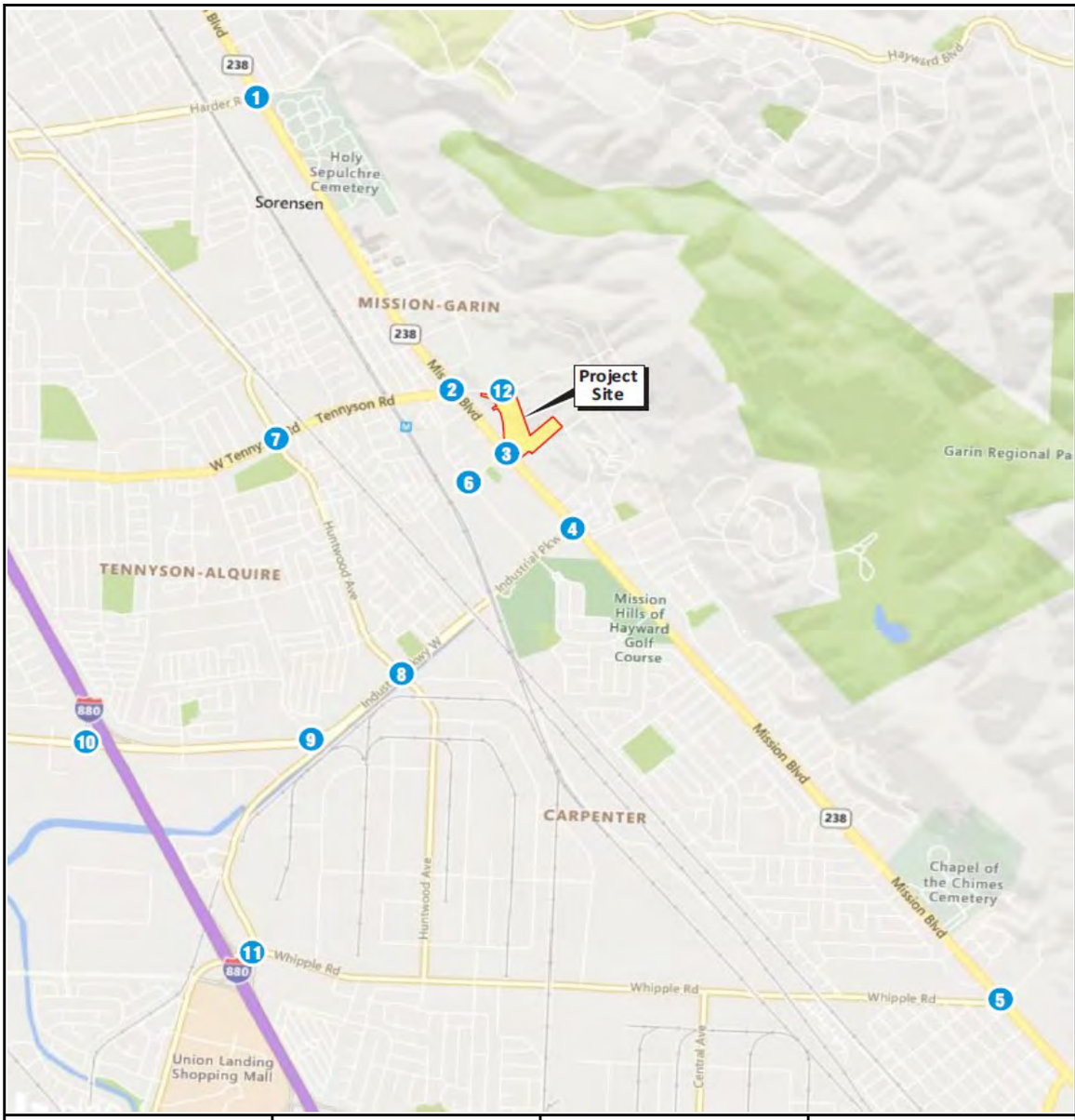
Table C summarizes the results of the Cumulative a.m. and p.m. peak-hour LOS analysis for the study area intersections using the HCM methodology. The Cumulative LOS calculation worksheets are contained in Appendix F. As Table C indicates, most study area intersections are forecast to operate at an unacceptable LOS (LOS F) in the peak hours including the following intersections:

- Mission Boulevard (SR-238)/Harder Road (LOS F in the a.m. and p.m. peak hours)
- Mission Boulevard (SR-238)/Industrial Parkway West (LOS F in the a.m. peak hour)
- Mission Boulevard (SR-238)/Whipple Road (LOS F in the a.m. peak hour)
- Dixon Street/Valle Vista Avenue (LOS F in the a.m. and p.m. peak hours)
- Huntwood Avenue/Tennyson Road (LOS F in the a.m. and p.m. peak hours)
- Huntwood Avenue/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Ruus Road/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- I-880 Southbound Ramps/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Industrial Parkway Southwest/Whipple Avenue (LOS F in the a.m. and p.m. peak hours)

PROPOSED PROJECT

Trip Generation

The daily and peak-hour trips for the proposed project were generated using trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 9th Edition (2012). Based on direction from City staff, adjustments were made for project residents and employees who may utilize Bay Area Rapid Transit (BART) as opposed to drive their own personal vehicles (i.e., 10 percent reduction of project trips). In addition, a pass-by trip reduction has been applied to the retail component of the project (i.e., 35 percent reduction of retail trips). Pass-by trips are made by drivers already on an adjacent/nearby roadway and, therefore, are not additive trips (e.g., stopped by the retail use on the way home from work).



1 Mission Blvd/Harder Rd

319 / 337	159 / 225	↰ 37 / 48
161 / 170	1721 / 1324	← 108 / 151
356 / 390	41 / 86	↰ 180 / 124
278 / 345	1151 / 1722	132 / 178

2 Mission Blvd/Tennyson Rd

366 / 355	268 / 356	↰ 0 / 13
2 / 4	1857 / 1291	← 6 / 14
306 / 270	11 / 42	↰ 10 / 11
256 / 388	1202 / 1740	4 / 1

3 Mission Blvd/Valle Vista Ave–Project Dwy

33 / 24	37 / 56	
48 / 59	2210 / 1558	
62 / 66	1482 / 2193	

4 Mission Blvd/Industrial Pkwy W

296 / 553	666 / 319	↰ 274 / 140
142 / 185	1462 / 1139	← 214 / 129
320 / 550	107 / 148	↰ 20 / 12
412 / 396	969 / 1549	8 / 19

5 Mission Blvd/Whipple Rd

147 / 224	110 / 133	↰ 16 / 13
12 / 18	1900 / 1063	← 16 / 9
259 / 321	14 / 21	↰ 41 / 29
336 / 301	837 / 1898	17 / 29

6 Dixon St/Valle Vista Ave

12 / 10	10 / 10	↰ 68 / 51
2 / 8	408 / 445	← 0 / 4
10 / 10	46 / 62	↰ 56 / 53
4 / 20	416 / 358	38 / 41

7 Huntwood Ave/Tennyson Rd

46 / 118	51 / 53	↰ 56 / 44
866 / 902	251 / 168	← 925 / 815
120 / 111	182 / 90	↰ 255 / 263
125 / 166	132 / 382	156 / 298

8 Huntwood Ave/Industrial Pkwy W

95 / 317	130 / 114	↰ 47 / 119
535 / 1251	482 / 173	← 1274 / 805
402 / 211	103 / 94	↰ 422 / 138
224 / 498	136 / 684	115 / 354

9 Ruus Rd–Industrial Pkwy SW/Industrial Pkwy W

27 / 63	110 / 71	↰ 32 / 56
721 / 970	460 / 202	← 1097 / 979
125 / 115	43 / 27	↰ 545 / 437
234 / 413	123 / 532	38 / 18

10 I-880 SB Ramps/Industrial Pkwy W

172 / 377	383 / 293	↰ 524 / 235
717 / 1212	296 / 440	← 1240 / 1063

11 I-880 NB Ramps–Industrial Pkwy SW/Whipple Rd

365 / 847	1053 / 778	↰ 209 / 455
789 / 813	432 / 357	← 915 / 978
537 / 188	569 / 816	328 / 115

12 Project Dwy/Tennyson Rd

Future Intersection

LSA

FIGURE 7

LEGEND

XXX / YYY AM / PM Volume

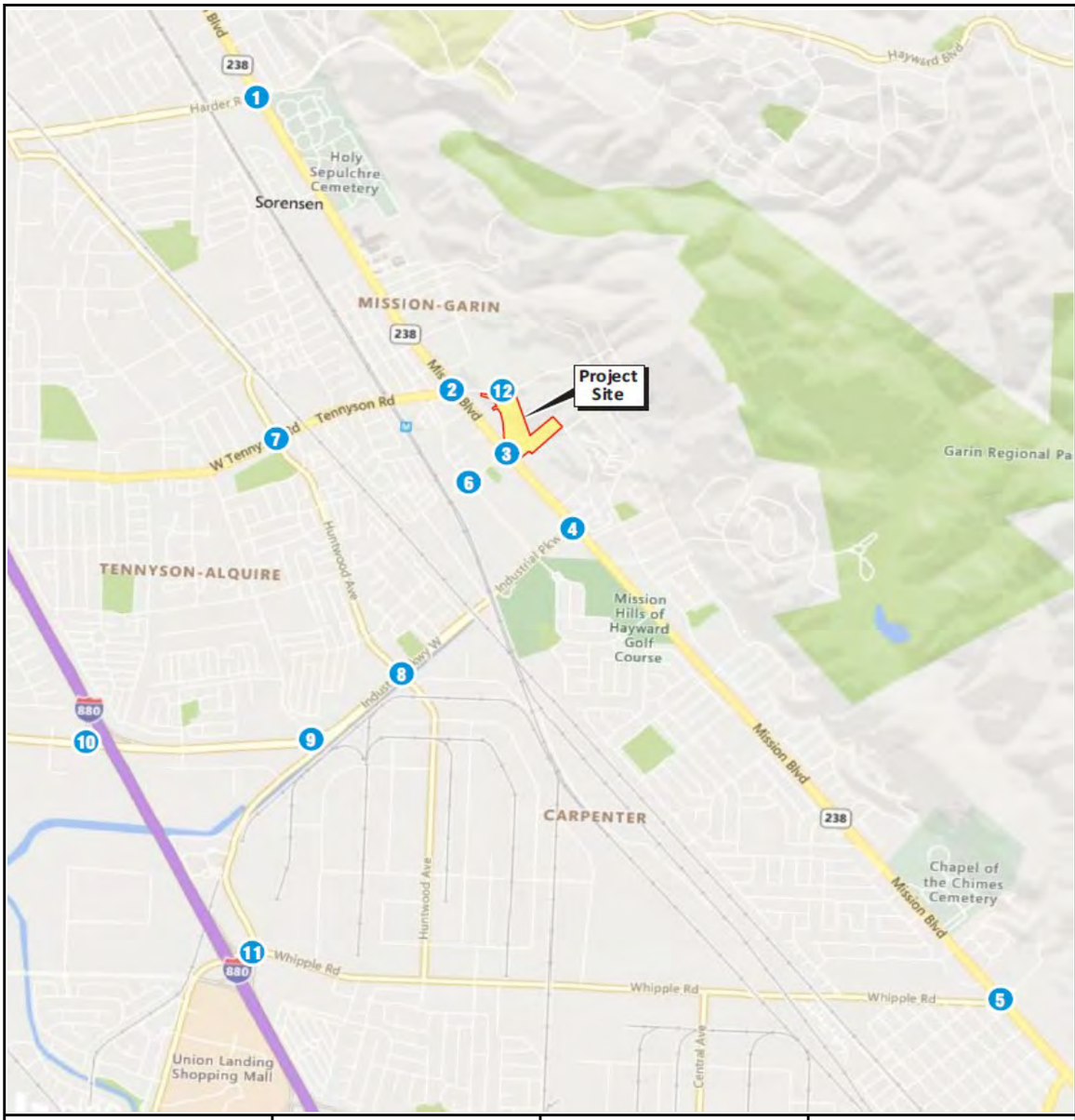
29212 Mission Boulevard

Background Intersection Peak-Hour Volumes

Table B: Background Intersection Level of Service Summary

No.	Study Intersection	Control	Peak Hour	Approach	Delay	LOS
1	Mission Boulevard (SR-238)/Harder Road	Signal	AM	–	49.6	D
			PM	–	56.3	E
2	Mission Boulevard (SR-238)/Tennyson Road	Signal	AM	–	25.8	C
			PM	–	28.2	C
3	Mission Boulevard (SR-238)/Valle Vista Avenue	Signal	AM	–	14.6	B
			PM	–	8.3	A
4	Mission Boulevard (SR-238)/Industrial Parkway West	Signal	AM	–	38.6	D
			PM	–	44.9	D
5	Mission Boulevard (SR-238)/Whipple Road	Signal	AM	–	30.1	C
			PM	–	19.2	B
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	19.1	C
			PM	SB	20.3	C
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	39.2	D
			PM	–	39.4	D
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	73.7	E
			PM	–	66.4	E
9	Ruus Road/Industrial Parkway West	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	30.8	C
			PM	–	40.7	D
11	Industrial Parkway Southwest/Whipple Avenue	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*			

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
I-880 = Interstate 880
AWSC = all-way stop control
LOS = level of service
SB = southbound
SR-238 = State Route 238



202 / 326 ↰	2381 / 1796 ↓	79 / 148 ↳
390 / 508 ↰	279 / 318 →	416 / 589 ↳
347 / 484 ↰	1636 / 2255 ↑	256 / 297 ↱
↰ 55 / 70	← 140 / 235	↶ 256 / 181

1 Mission Blvd/Harder Road

358 / 487 ↰	2551 / 1860 ↓	15 / 63 ↳
475 / 491 ↰	3 / 6 →	384 / 392 ↳
352 / 526 ↰	1750 / 2366 ↑	5 / 2 ↱
↰ 0 / 16	← 15 / 18	↶ 24 / 14

2 Mission Blvd/Tennyson Road

40 / 92 ↰	2988 / 2225 ↓	
63 / 28 ↰	90 / 73 ↳	
67 / 109 ↰	2096 / 2956 ↑	

3 Mission Blvd/Valle Vista Ave-Proj. Dwy

867 / 474 ↰	2075 / 1661 ↓	114 / 153 ↳
408 / 682 ↰	174 / 191 →	512 / 797 ↳
663 / 672 ↰	1459 / 2239 ↑	11 / 23 ↱
↰ 284 / 145	← 241 / 154	↶ 25 / 14

4 Mission Blvd/Industrial Parkway W.

113 / 150 ↰	2726 / 1730 ↓	26 / 31 ↳
170 / 247 ↰	20 / 21 →	337 / 430 ↳
454 / 378 ↰	1397 / 2860 ↑	38 / 46 ↱
↰ 25 / 19	← 19 / 11	↶ 69 / 50

5 Mission Blvd/Whipple Road

11 / 11 ↰	668 / 615 ↓	81 / 66 ↳
13 / 11 ↰	3 / 8 →	11 / 11 ↳
5 / 21 ↰	595 / 641 ↑	74 / 57 ↱
↰ 70 / 92	← 0 / 4	↶ 71 / 91

6 Dixon Street/Valle Vista Avenue

58 / 57 ↰	296 / 227 ↓	212 / 124 ↳
52 / 121 ↰	1017 / 1229 →	143 / 147 ↳
199 / 200 ↰	209 / 446 ↑	253 / 452 ↱
↰ 75 / 55	← 1256 / 1044	↶ 359 / 411

7 Huntwood Avenue/Tennyson Road

188 / 154 ↰	635 / 234 ↓	146 / 138 ↳
143 / 378 ↰	658 / 1607 →	457 / 247 ↳
257 / 611 ↰	188 / 857 ↑	128 / 476 ↱
↰ 76 / 161	← 1746 / 1068	↶ 524 / 183

8 Huntwood Avenue/Industrial Parkway W.

113 / 77 ↰	703 / 342 ↓	44 / 30 ↳
28 / 65 ↰	884 / 1397 →	238 / 232 ↳
664 / 944 ↰	225 / 806 ↑	105 / 41 ↱
↰ 33 / 58	← 1277 / 1096	↶ 945 / 754

9 Russ Road/Industrial Parkway W.

393 / 363 ↰	306 / 517 ↳	
226 / 440 ↰	1006 / 1733 →	
↰ 592 / 275	← 1789 / 1592	

10 I-880 Southbound Ramps/Industrial Parkway W.

1468 / 1102 ↰	710 / 614 ↳	
595 / 1228 ↰	958 / 932 →	
555 / 194 ↰	816 / 844 ↑	340 / 119 ↱
↰ 371 / 789	← 1026 / 1104	

11 I-880 Northbound Ramps/Whipple Road

Future Intersection

12 Project Dwy/Tennyson Rd

LSA

FIGURE 8

LEGEND

XXX / YYY AM / PM Volume

29212 Mission Boulevard

Cumulative Intersection Peak-Hour Volumes

Table C: Cumulative Intersection Level of Service Summary

No.	Study Intersection	Control	Peak Hour	Approach	Delay	LOS
1	Mission Boulevard (SR-238)/Harder Road	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
2	Mission Boulevard (SR-238)/Tennyson Road	Signal	AM	–	39.5	D
			PM	–	37.0	D
3	Mission Boulevard (SR-238)/Valle Vista Avenue	Signal	AM	–	>80.0	F
			PM	–	45.2	D
4	Mission Boulevard (SR-238)/Industrial Parkway West	Signal	AM	–	>80.0	F
			PM	–	71.1	E
5	Mission Boulevard (SR-238)/Whipple Road	Signal	AM	–	>80.0	F
			PM	–	59.0	E
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	>50.0	F
			PM	NB	>50.0	F
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
9	Ruus Road/Industrial Parkway West	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
11	Industrial Parkway Southwest/Whipple Avenue	Signal	AM	–	>80.0	F
			PM	–	>80.0	F
12	Project Driveway & Tennyson Road	Stop	*Future Intersection*			

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS
AWSC = all-way stop control
I-880 = Interstate 880
LOS = level of service
NB = northbound
SB = southbound
SR-238 = State Route 238

Table D: Project Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Condo/Townhome		DU	5.81	0.07	0.37	0.44	0.35	0.17	0.52
Specialty Retail Center		TSF	44.32	0.00	0.00	0.00	1.19	1.52	2.71
Day Care Center		TSF	74.06	6.46	5.72	12.18	5.80	6.54	12.34
Project Trip Generation									
Condo/Townhome	189	DU	1,098	13	70	83	66	32	98
Specialty Retail Center	2.773	TSF	123	0	0	0	3	5	8
Day Care Center	8.048	TSF	596	52	46	98	47	53	100
		TOTAL	**1,817**	**65**	**116**	**181**	**116**	**90**	**206**
Project Trip Adjustments									
BART Reduction (Total Project Trips)		10%	182	6	12	18	12	9	21
Pass-By Reduction (Retail Trips)		35%	43	0	0	0	1	2	3
		TOTAL	**225**	**6**	**12**	**18**	**13**	**11**	**24**
Net New Trips (Trip Generation - Adjustments)			**1,592**	**59**	**104**	**163**	**103**	**79**	**182**

[1] Trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 9th Edition (2012).
Land Use Code (230) - Residential Condominium/Townhouse
Land Use Code (826) - Specialty Retail Center
Land Use Code (565) - Day Care Center

ADT = average daily trips
BART = Bay Area Rapid Transit
DU = dwelling unit
TSF = thousand square feet

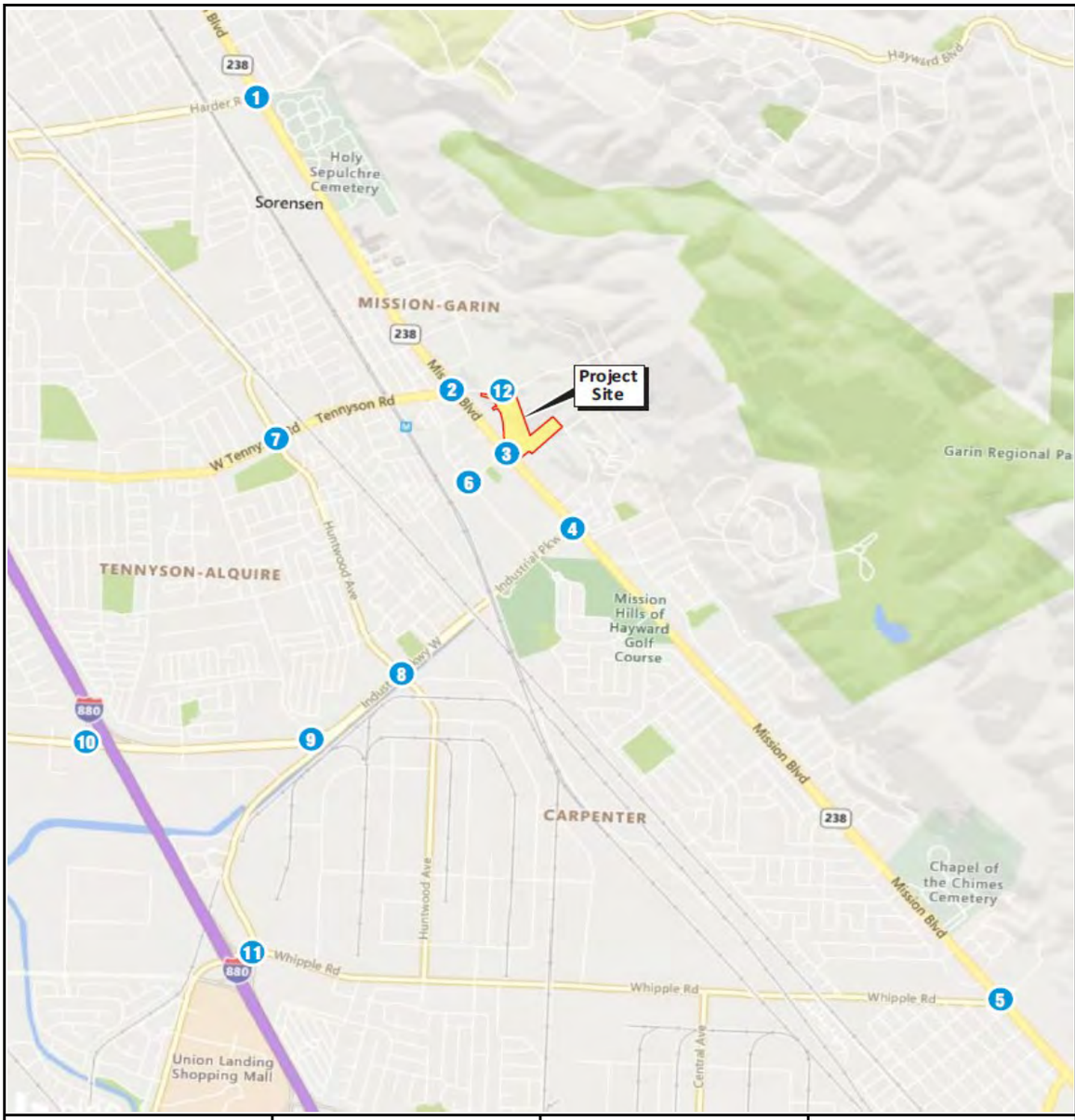
The proposed project would generate 1,592 net average daily trips, 163 net a.m. peak-hour trips (59 in and 104 out), and 182 net p.m. peak-hour trips (103 in and 79 out). Table D presents the resulting trip generation.

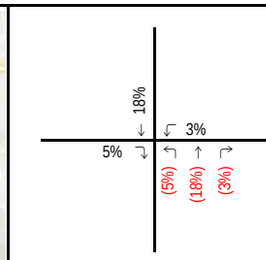
Project Trip Distribution and Assignment

Project traffic volumes for vehicles both entering and exiting the project site were distributed and assigned to the adjacent street system based on the proximity to major arterials and local and regional destinations. A regional trip distribution for the proposed project was developed based on a select zone assignment (Appendix G) from the City of Hayward General Plan Update Travel Model and logical travel corridors and minimum time paths. The project trip distribution and assignment are shown on Figures 9 and 10, respectively.

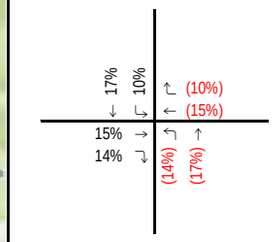
EXISTING PLUS PROJECT CONDITIONS

To determine Existing Plus Project conditions, traffic generated by the proposed project was added to Existing (2019) traffic volumes at the study area intersections. Figure 11 shows the existing and proposed intersection and driveway geometrics. As previously described, the project would provide a new driveway along Mission Boulevard, creating the fourth leg of the Mission Boulevard/Valle Vista Avenue intersection. Based on the anticipated volumes entering and exiting the project driveway along Mission Boulevard and Valle Vista, to maintain consistency with the existing signal operations, permissive phasing has been assumed for the east leg (project driveway) of the new four-leg intersection. Figure 12 shows the resulting Existing Plus Project a.m. and p.m. peak-hour traffic volumes at the study area intersections.

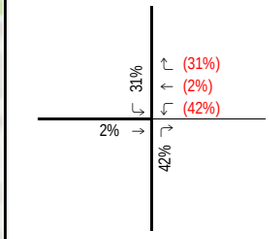




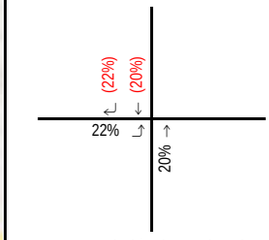
1 Mission Blvd/Harder Road



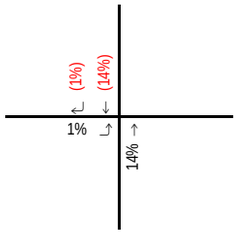
2 Mission Blvd/Tennyson Road



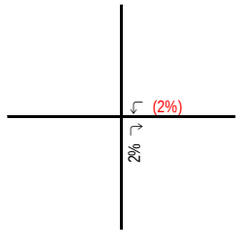
3 Mission Blvd/Valle Vista Ave-Proj. Dwy



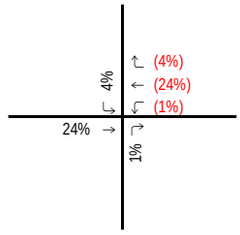
4 Mission Blvd/Industrial Parkway W.



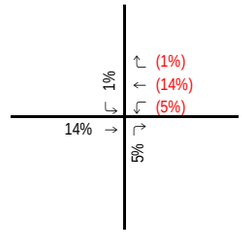
5 Mission Blvd/Whipple Road



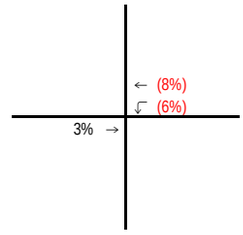
6 Dixon Street/Valle Vista Avenue



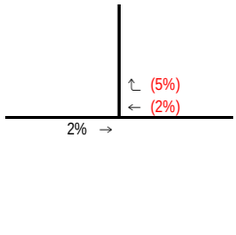
7 Huntwood Avenue/Tennyson Road



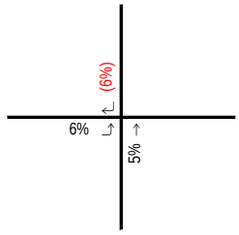
8 Huntwood Avenue/Industrial Parkway W.



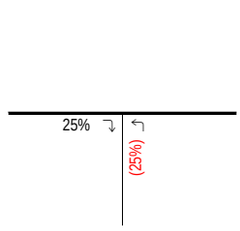
9 Russ Road/Industrial Parkway W.



10 I-880 Southbound Ramps/Industrial Parkway W.



11 I-880 Northbound Ramps/Whipple Road



12 Project Dwy/Tennyson Rd

LSA

FIGURE 9

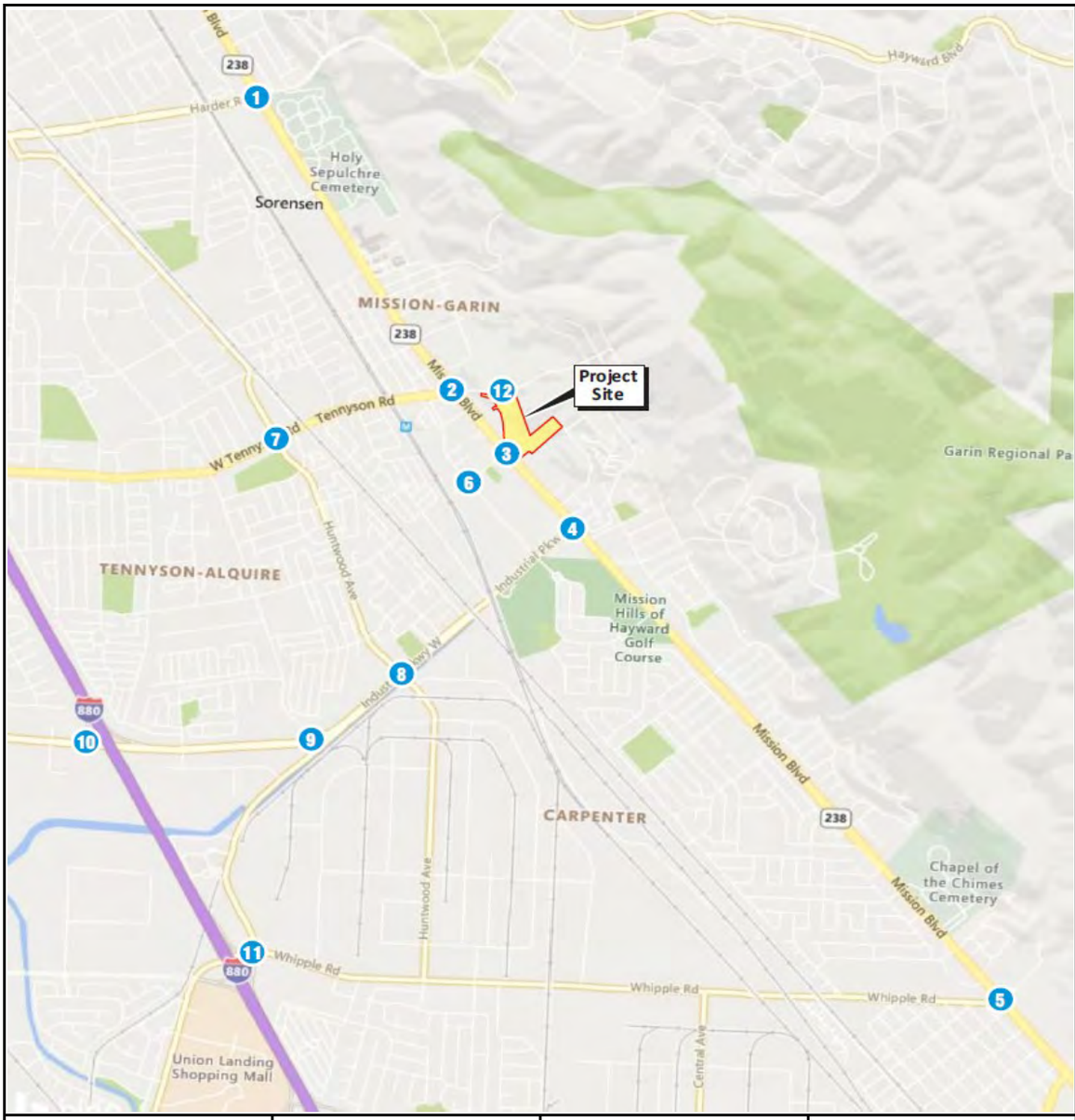
LEGEND

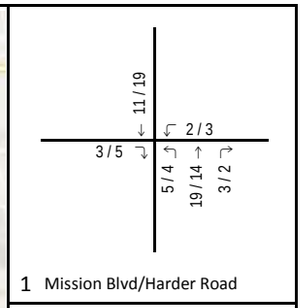
XX%/(YY%) Inbound/Outbound Trip Distribution

Project Driveway

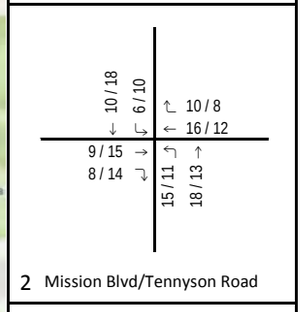
29212 Mission Boulevard

Project Trip Distribution

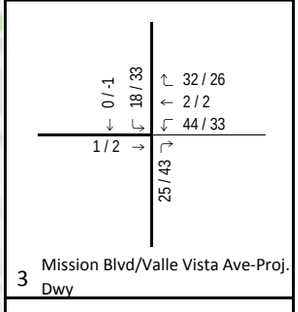




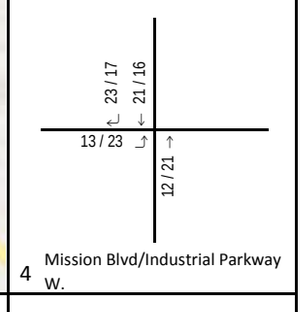
1 Mission Blvd/Harder Road



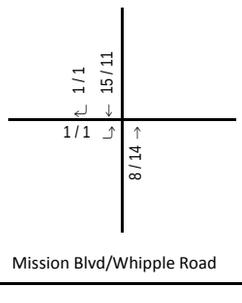
2 Mission Blvd/Tennyson Road



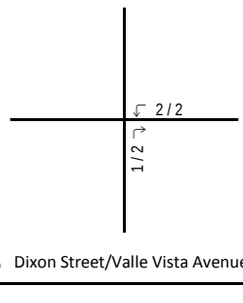
3 Mission Blvd/Valle Vista Ave-Proj. Dwy



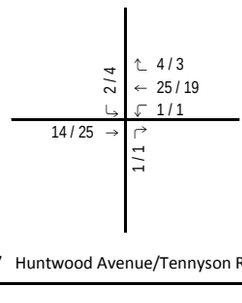
4 Mission Blvd/Industrial Parkway W.



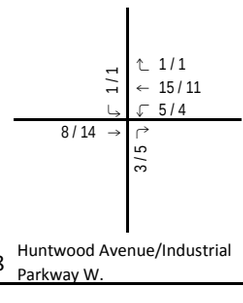
5 Mission Blvd/Whipple Road



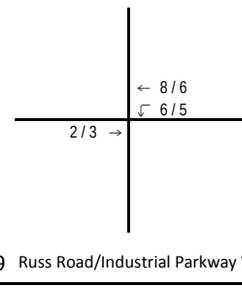
6 Dixon Street/Valle Vista Avenue



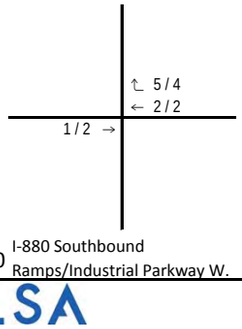
7 Huntwood Avenue/Tennyson Road



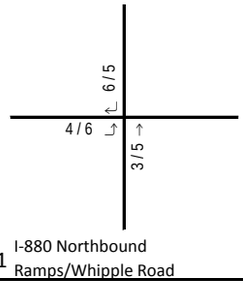
8 Huntwood Avenue/Industrial Parkway W.



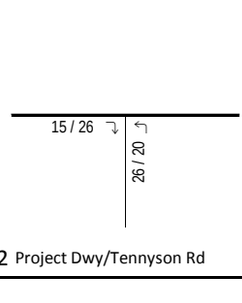
9 Russ Road/Industrial Parkway W.



10 I-880 Southbound Ramps/Industrial Parkway W.



11 I-880 Northbound Ramps/Whipple Road



12 Project Dwy/Tennyson Rd

LSA

FIGURE 10

LEGEND

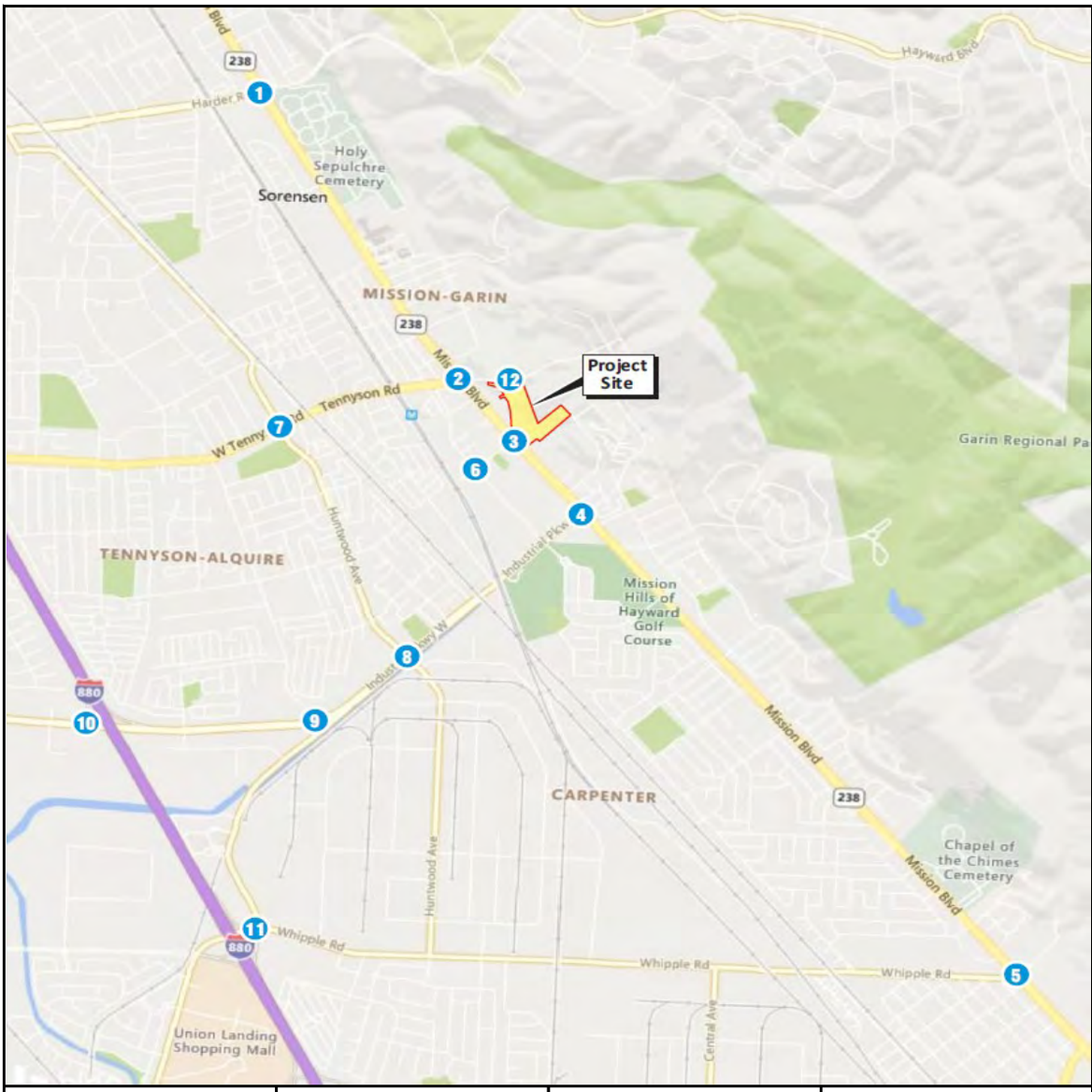
XXX / YYY AM / PM Volume

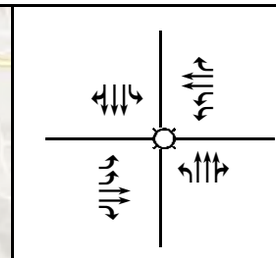
_____ Project Driveway

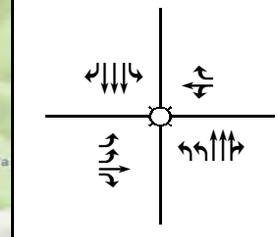
Negative trips at intersection #3 are pass-by trips.

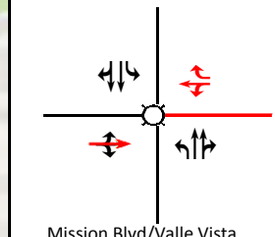
29212 Mission Boulevard

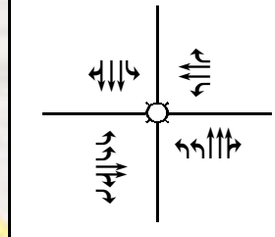
Project Trip Assignment

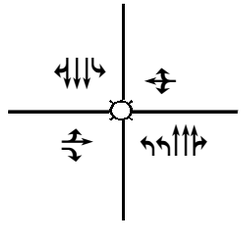


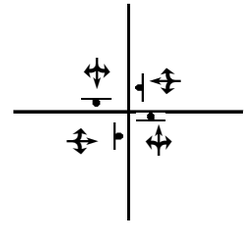

1 Mission Blvd/Harder Rd

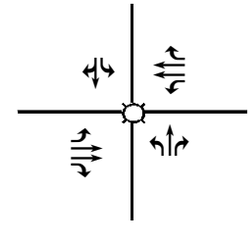

2 Mission Blvd/Tennyson Rd

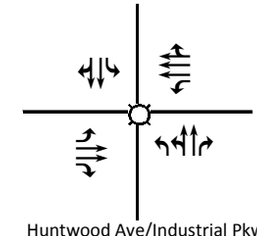

3 Mission Blvd/Valle Vista Ave–Project Dwy

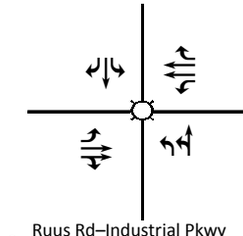

4 Mission Blvd/Industrial Pkwy W

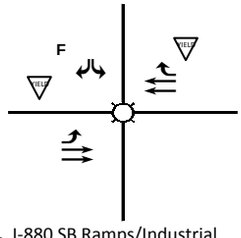

5 Mission Blvd/Whipple Rd


6 Dixon St/Valle Vista Ave

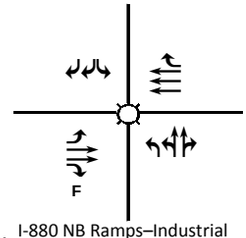

7 Huntwood Ave/Tennyson Rd


8 Huntwood Ave/Industrial Pkwy W

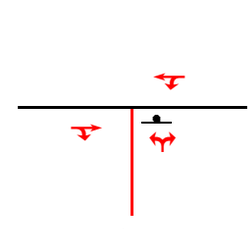

9 Ruus Rd–Industrial Pkwy SW/Industrial Pkwy W



10 I-880 SB Ramps/Industrial Pkwy W



11 I-880 NB Ramps–Industrial Pkwy SW/Whipple Rd


12 Project Dwy/Tennyson Rd

LSA

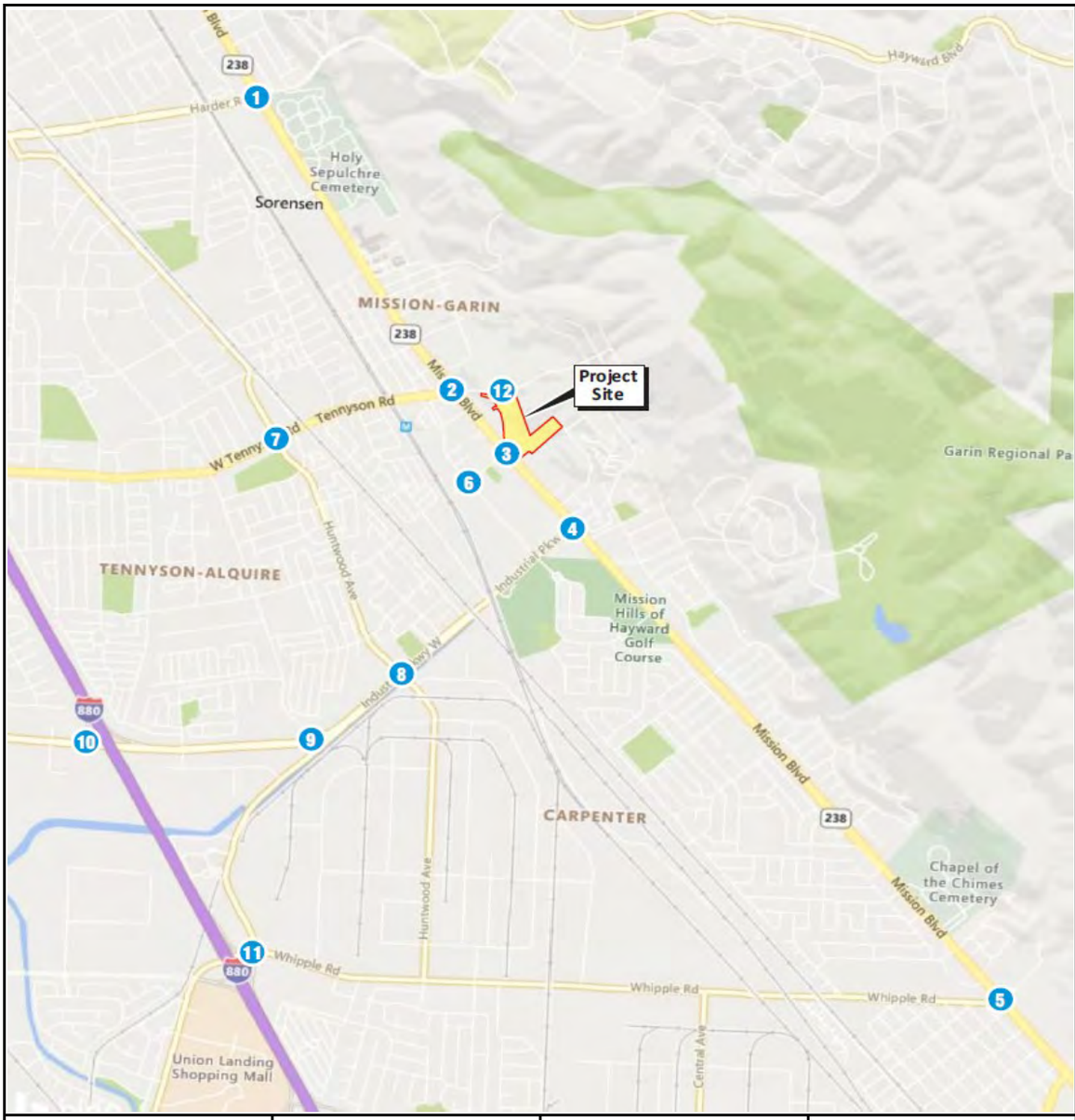
FIGURE 11

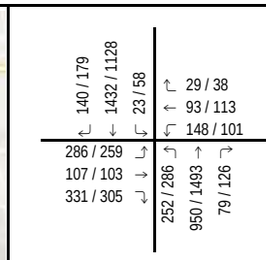
LEGEND

Signal
Stop Sign
F Free Right Turn
Yield
New Project Driveway
New Project Turn Movement

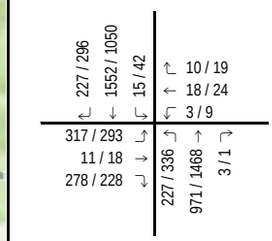
29212 Mission Boulevard

Existing Plus Project Intersection Geometry

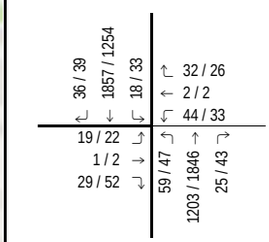




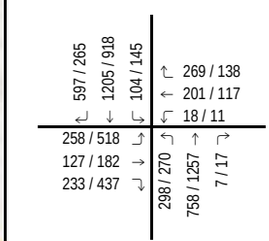
1 Mission Blvd/Harder Road



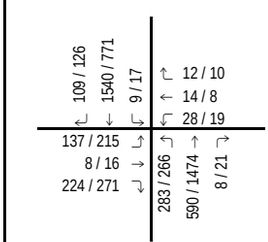
2 Mission Blvd/Tennyson Road



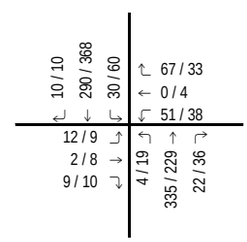
3 Mission Blvd/Valle Vista Ave-Proj. Dwy



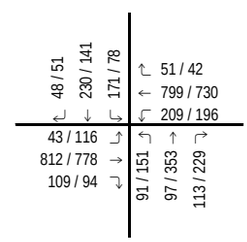
4 Mission Blvd/Industrial Parkway W.



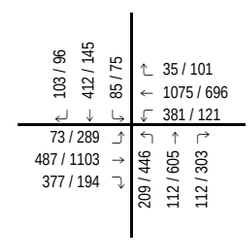
5 Mission Blvd/Whipple Road



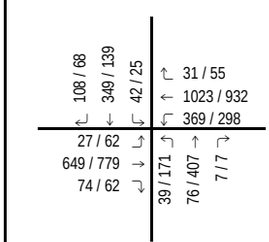
6 Dixon Street/Valle Vista Avenue



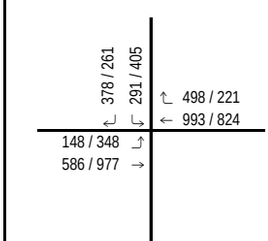
7 Huntwood Avenue/Tennyson Roa



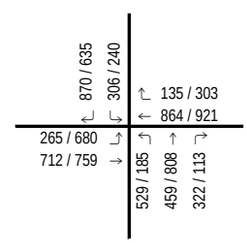
8 Huntwood Avenue/Industrial Parkway W.



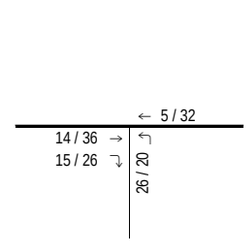
9 Russ Road/Industrial Parkway W.



10 I-880 Southbound Ramps/Industrial Parkway W.



11 I-880 Northbound Ramps/Whipple Road



12 Project Dwy/Tennyson Rd

LSA

FIGURE 12

LEGEND

XXX / YYY AM / PM Volume

_____ Project Driveway

29212 Mission Boulevard

Existing Plus Project Intersection Peak-Hour Volumes

Table E summarizes the results of the Existing Plus Project a.m. and p.m. peak-hour LOS analysis for the study area intersections using the HCM methodology. Appendix B provides the Existing Plus Project LOS calculation worksheets.

As Table E indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours with implementation of the project, with the exception of Industrial Parkway Southwest/Whipple Avenue (LOS F) in the p.m. peak hour. Because the project would not increase the deficient p.m. peak-hour delay by more than 5 seconds, a significant intersection impact would not occur at Industrial Parkway Southwest/ Whipple Avenue.

BACKGROUND PLUS PROJECT CONDITIONS

To determine Background Plus Project conditions, traffic generated by the proposed project was added to Background (2024) traffic volumes at the study area intersections. Figure 13 shows the resulting Background Plus Project a.m. and p.m. peak-hour traffic volumes at the study area intersections.

Table F summarizes the results of the Background Plus Project a.m. and p.m. peak-hour LOS analysis for the study area intersections using the HCM methodology. Appendix E provides the Background Plus Project LOS calculation worksheets. As Table F indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours with implementation of the project, with the exception of Ruus Road/Industrial Parkway West (LOS F) in the a.m. and p.m. peak hours and Industrial Parkway Southwest/Whipple Avenue (LOS F) in the a.m. and p.m. peak hours. Because the project would not increase the deficient a.m. and p.m. peak-hour delay by more than 5 seconds, a significant intersection impact would not occur at Ruus Road/Industrial Parkway West or Industrial Parkway Southwest/Whipple Avenue.

CUMULATIVE PLUS PROJECT CONDITIONS

To determine Cumulative Plus Project conditions, traffic generated by the proposed project was added to Cumulative (2035) traffic volumes at the study area intersections. Figure 14 shows the resulting Cumulative Plus Project a.m. and p.m. peak-hour traffic volumes at the study area intersections.

Table G summarizes the results of the Cumulative Plus Project a.m. and p.m. peak-hour LOS analysis for the study area intersections using the HCM methodology. Appendix F provides the Cumulative Plus Project LOS calculation worksheets. As Table G indicates, all study area intersections are forecast to operate at an acceptable LOS (LOS E or better) in the peak hours with the project, with the exception of the following intersections:

- Mission Boulevard (SR-238)/Harder Road (LOS F in the a.m. and p.m. peak hours)
- Mission Boulevard (SR-238)/Industrial Parkway West (LOS F in the a.m. peak hour)
- Mission Boulevard (SR-238)/Whipple Road (LOS F in the a.m. peak hour)
- Dixon Street/Valle Vista Avenue (LOS F in the a.m. and p.m. peak hours)
- Huntwood Avenue/Tennyson Road (LOS F in the a.m. and p.m. peak hours)
- Huntwood Avenue/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Ruus Road/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)

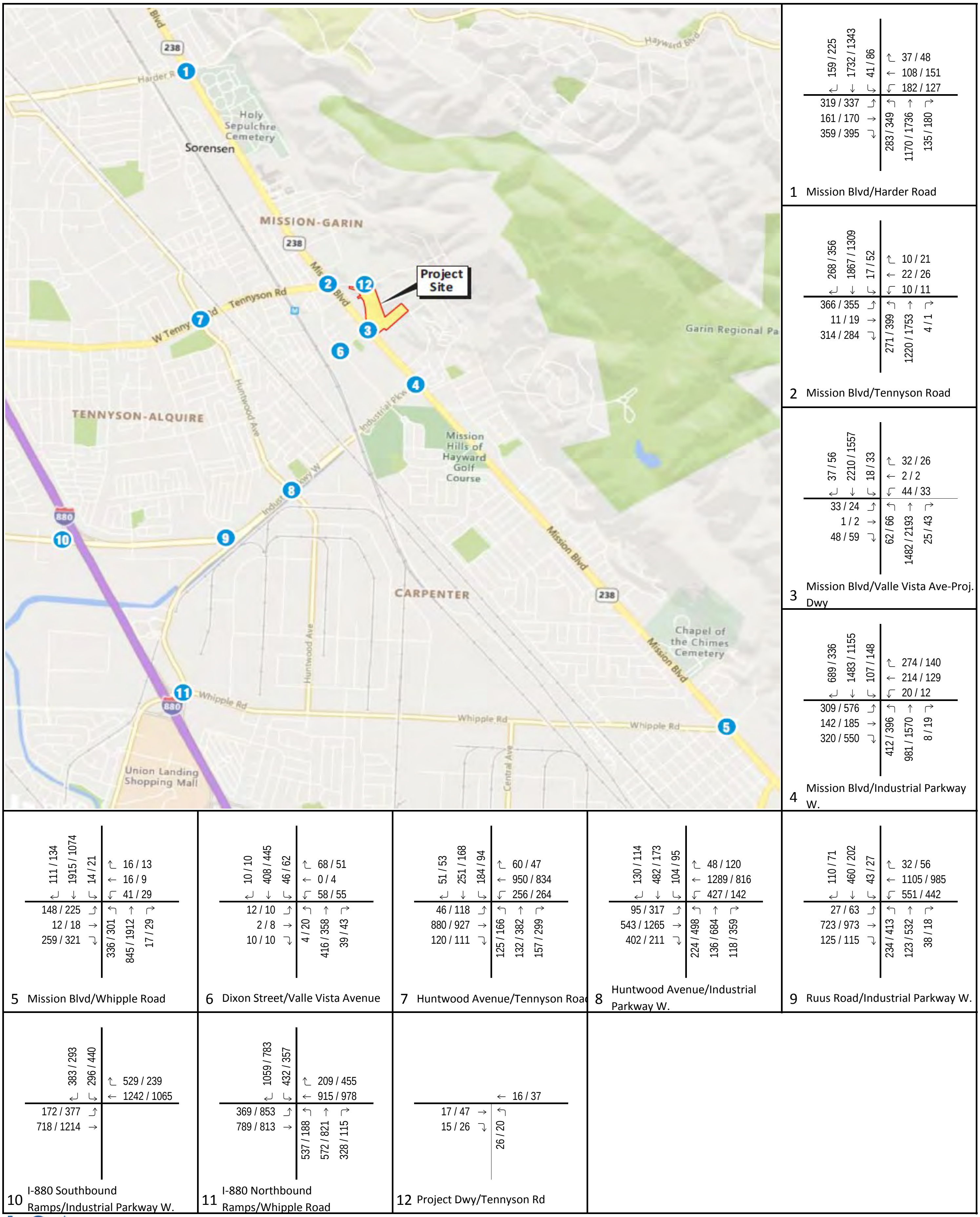
Table E: Existing Plus Project Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	36.6	D	AM	–	36.9	D	AM	0.3	No
			PM	–	37.4	D	PM	–	37.7	D	PM	0.3	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	23.1	C	AM	–	25.4	C	AM	2.3	No
			PM	–	25.3	C	PM	–	27.2	C	PM	1.9	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	8.4	A	AM	–	10.4	B	AM	2.0	No
			PM	–	6.2	A	PM	–	10.2	B	PM	4.0	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	29.8	C	AM	–	30.3	C	AM	0.5	No
			PM	–	28.7	C	PM	–	29.5	C	PM	0.8	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	19.8	B	AM	–	19.9	B	AM	0.1	No
			PM	–	17.5	B	PM	-	17.6	B	PM	0.1	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	NB	12.3	B	AM	NB	12.3	B	AM	0	No
			PM	SB	12.9	B	PM	SB	13.0	B	PM	0.1	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	29.8	C	AM	–	30.7	C	AM	0.9	No
			PM	–	31.9	C	PM	–	32.7	C	PM	0.8	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	47.2	D	AM	–	47.9	D	AM	0.7	No
			PM	–	48.4	D	PM	–	48.9	D	PM	0.5	
9	Russ Road/Industrial Parkway West	Signal	AM	–	25.0	C	AM	–	25.7	C	AM	0.7	No
			PM	–	20.7	C	PM	–	21.9	C	PM	1.2	
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	23.9	C	AM	–	23.9	C	AM	0	No
			PM	–	28.6	C	PM	–	28.6	C	PM	0	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	49.4	D	AM	–	49.7	D	AM	0.3	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.3	
12	Project Driveway & Tennyson Road	OWSC	*Future Intersection*				AM	NB	8.8	A	AM	N/A	N/A
							PM	NB	9.0	A	PM	N/A	

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS

[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.

Δ = change
NB = northbound SB = southbound
LOS = level of service N/A = not applicable (future intersection)
AWSC = all-way stop control OWSC = one-way stop control



LSA

FIGURE 13

LEGEND

XXX / YYY AM / PM Volume

Project Driveway

29212 Mission Boulevard

Background Plus Project Intersection Traffic Volumes

P:\HAY1701.06\Figures\Fig 13- Background Plus Project Intersection Traffic Volumes.xlsx (9/18/2019)

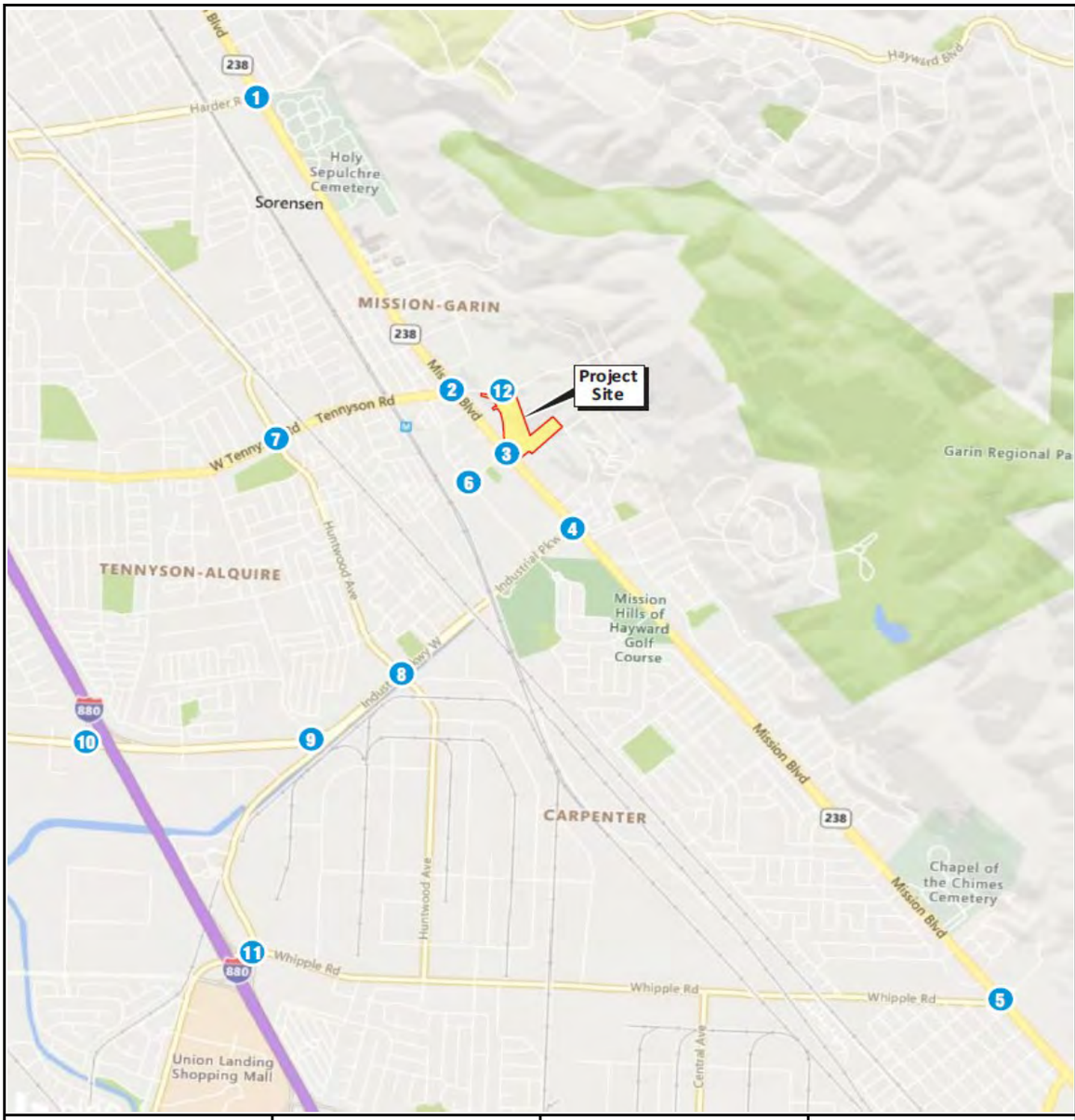
Table F: Background Plus Project Intersection Levels of Service Summary

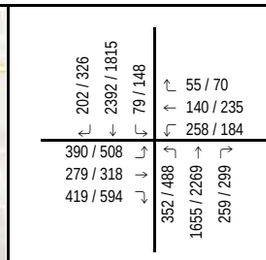
No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	49.6	D	AM	–	50.7	D	AM	1.1	No
			PM	–	56.3	E	PM	–	57.8	E	PM	1.5	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	25.8	C	AM	–	28.3	C	AM	2.5	No
			PM	–	28.2	C	PM	–	29.9	C	PM	1.7	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	14.6	B	AM	–	13.5	B	AM	-1.1[1]	No
			PM	–	8.3	A	PM	–	12.8	B	PM	4.5	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	38.6	D	AM	–	40.3	D	AM	1.7	No
			PM	–	44.9	D	PM	–	47.5	D	PM	2.6	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	30.1	C	AM	–	31.1	C	AM	1	No
			PM	–	19.2	B	PM	–	19.3	B	PM	0.1	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	19.1	C	AM	SB	19.3	C	AM	0.2	No
			PM	SB	20.3	C	PM	SB	20.5	C	PM	0.2	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	39.2	D	AM	–	41.5	D	AM	2.3	No
			PM	–	39.4	D	PM	–	40.9	D	PM	1.5	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	73.7	E	AM	–	74.7	E	AM	1	No
			PM	–	66.4	E	PM	–	67.3	E	PM	0.9	
9	Russ Road/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.5	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	2.8	
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	30.8	C	AM	–	30.9	C	AM	0.1	No
			PM	–	40.7	D	PM	–	40.8	D	PM	0.1	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.3	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.5	
12	Project Driveway & Tennyson Road	OWSC	*Future Intersection*				AM	NB	8.8	A	AM	N/A	N/A
							PM	NB	9.1	A	PM	N/A	

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS

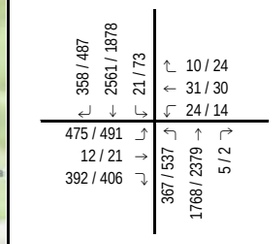
[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.

Δ = change
NB = northbound SB = southbound
LOS = level of service N/A = not applicable (future intersection)
AWSC = all-way stop control OWSC = one-way stop control

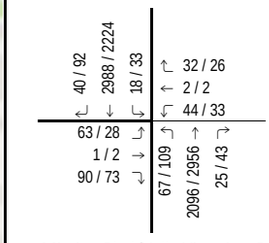




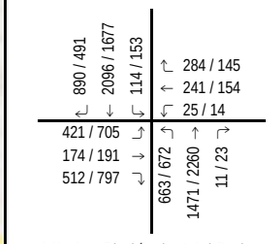
1 Mission Blvd/Harder Road



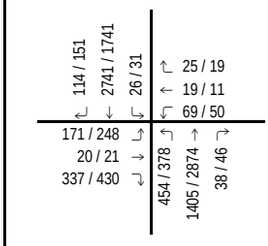
2 Mission Blvd/Tennyson Road



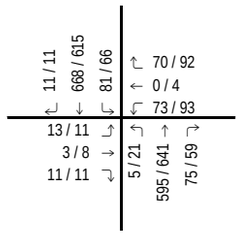
3 Mission Blvd/Valle Vista Ave-Proj. Dwy



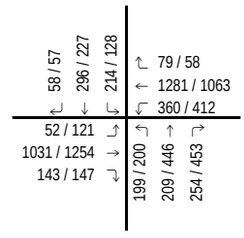
4 Mission Blvd/Industrial Parkway W.



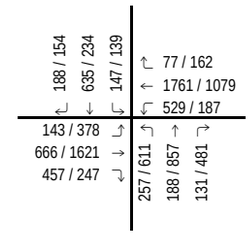
5 Mission Blvd/Whipple Road



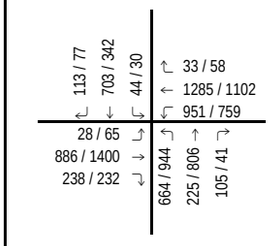
6 Dixon Street/Valle Vista Avenue



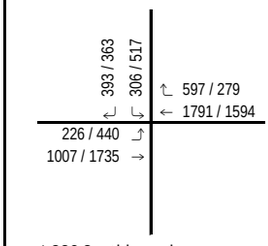
7 Huntwood Avenue/Tennyson Roa



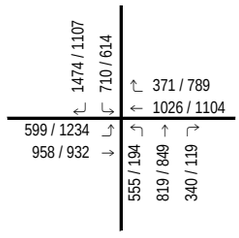
8 Huntwood Avenue/Industrial Parkway W.



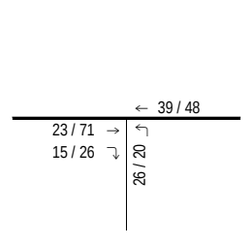
9 Ruus Road/Industrial Parkway W.



10 I-880 Southbound Ramps/Industrial Parkway W.



11 I-880 Northbound Ramps/Whipple Road



12 Project Dwy/Tennyson Rd

LSA

FIGURE 14

LEGEND

XXX / YYY AM / PM Volume

_____ Project Driveway

29212 Mission Boulevard

Cumulative Plus Project Intersection Peak-Hour Volumes

Table G: Cumulative Plus Project Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	3.8	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3.9	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	39.5	D	AM	–	42.5	D	AM	3	No
			PM	–	37.0	D	PM	–	38.2	D	PM	1.2	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	51.4	D	AM	–	56.9	E	AM	5.5	No
			PM	–	44.8	D	PM	–	41.1	D	PM	-3.7[1]	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4.9	No
			PM	–	71.1	E	PM	–	75.0	D	PM	3.9	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	2.2	No
			PM	–	58.1	E	PM	–	59.8	E	PM	1.7	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	>50.0	F	AM	SB	>50.0	F	AM	1.2	No
			PM	NB	>50.0	F	PM	NB	>50.0	F	PM	1.2	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4.1	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3.7	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.2	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.8	
9	Russ Road/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.2	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3	
10	I-880 SB Ramps/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	0.5	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	0.2	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.6	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	1.5	
12	Project Driveway & Tennyson Road	OWSC	*Future Intersection*				AM	NB	9.0	A	AM	N/A	N/A
							PM	NB	9.3	A	PM	N/A	

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS

[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.

Δ = change
AWSC = all-way stop control
OWSC = one-way stop control
LOS = level of service
N/A = not applicable (future intersection)
NB = northbound
SB = southbound

- I-880 Southbound Ramps/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Industrial Parkway Southwest/Whipple Avenue (LOS F in the a.m. and p.m. peak hours)

CUMULATIVE PLUS PROJECT CONDITIONS WITH I-880 IMPROVEMENTS

The Alameda County Transportation Commission (ACTC) is considering two improvement alternatives at the I-880 interchange along Industrial Parkway, which would alter the roadway geometry at the intersection of the I-880 Southbound Ramps/Industrial Parkway West. The I-880/ Industrial Parkway West interchange is an incomplete interchange and currently lacks a northbound off-ramp to Industrial Parkway West, forcing local traffic to exit at the Whipple Road interchange. This section will analyze the project Cumulative year condition with the proposed intersection alternatives in the No Project and Plus Project conditions. Figure 15 provides the proposed geometrics and traffic control devices at the study intersections with I-880 improvements. Figures 16a and 16b present the Cumulative with I-880 Improvements a.m. and p.m. peak-hour volumes for the study area intersections.

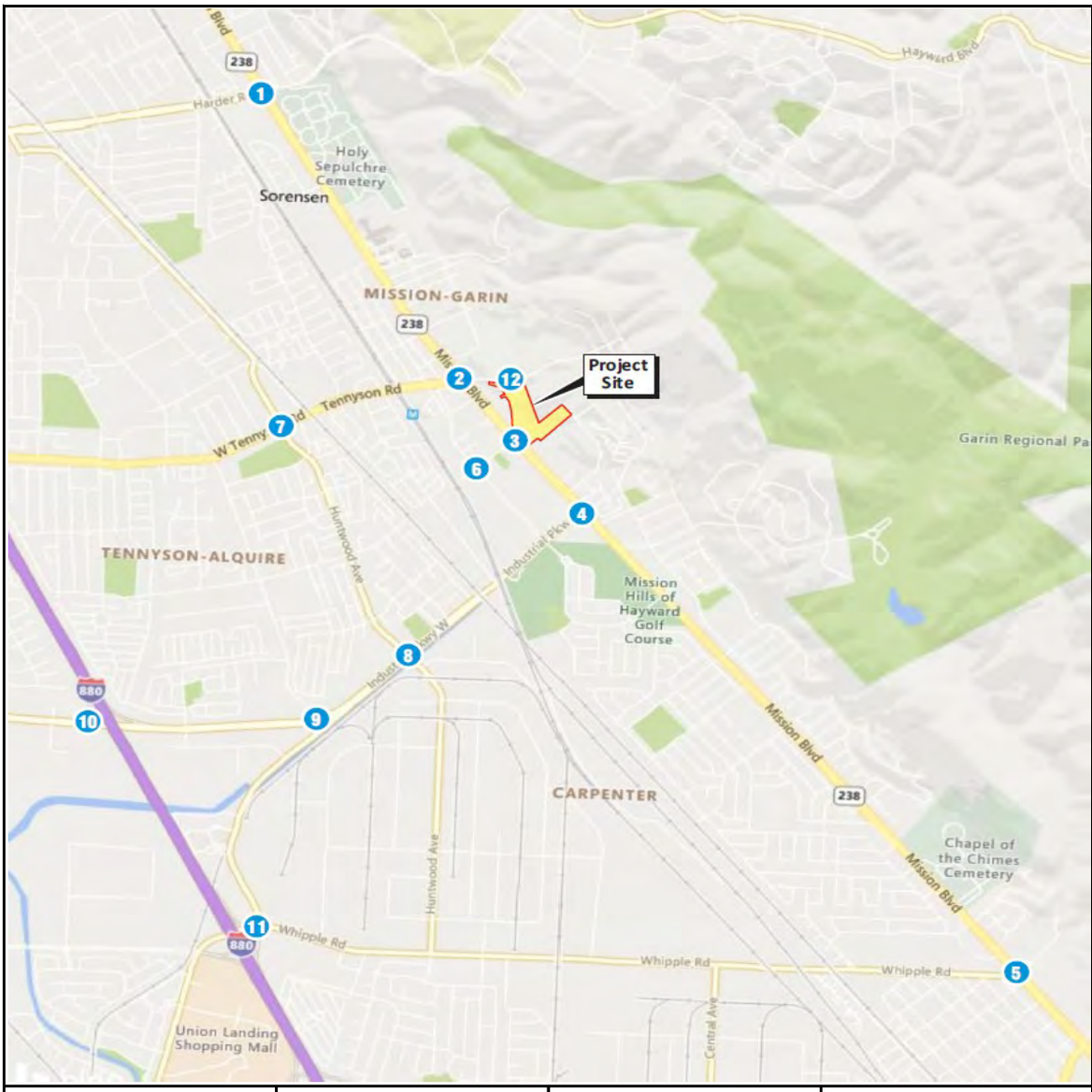
LSA prepared future traffic forecasts (provided in Appendix C) for the Cumulative with I-880 Improvements and Cumulative Plus Project with I-880 Improvements conditions using the Hayward General Plan Update Travel Demand Model. The model includes pending and approved projects in the project area. The project trip distribution and assignment are shown on Figures 17 and 18, respectively. It was assumed that with the proposed I-880 ramp improvements at Industrial Parkway, some of the inbound project trips traveling northbound on the I-880 would utilize the new Industrial Parkway off-ramp rather than the Tennyson Road off-ramp. Thus, with these trips added to Industrial Parkway, there would be a reduction of inbound project trips traveling on Tennyson Road. However, there would be no change to outbound project trips along Tennyson Road or Industrial Parkway, as only a small percentage of outbound project trips are anticipated to utilize I-880 ramps in the unimproved condition. Figures 19a and 19b present the Cumulative with I-880 Improvements Plus Project a.m. and p.m. peak-hour volumes for the study area intersections.

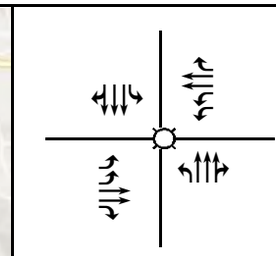
Alternative 1

With implementation of Alternative 1, the intersection will be reconstructed into a partial cloverleaf interchange alternative in this alternative condition. The geometry at the intersection of the I-880 Southbound Ramps/Industrial Parkway West will become three eastbound through lanes, two westbound through lanes, and one westbound right-turn lane. The existing northbound partial cloverleaf looped on-ramp will remain, and a new southbound on-ramp onto I-880 will be created, adding the southern leg to this intersection.

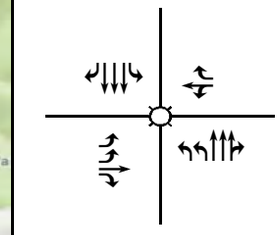
Alternative 2

With implementation of Alternative 2, the intersection will be configured as a diamond interchange. The geometry at the intersection of the I-880 Southbound Ramps/Industrial Parkway West will become two eastbound through lanes, one eastbound right, three westbound through lanes, and one southbound on-ramp to the I-880 freeway. A new southbound on-ramp onto I-880 will be created on the southern leg of the intersection and the existing partial cloverleaf looped on-ramp on the northern leg will be removed.

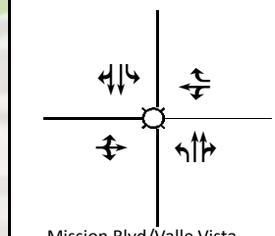




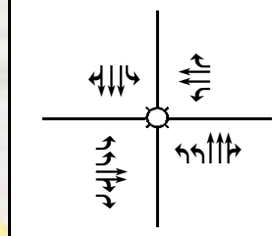
1 Mission Blvd/Harder Rd



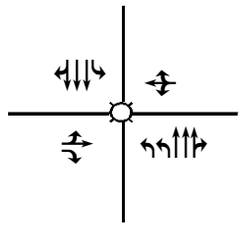
2 Mission Blvd/Tennyson Rd



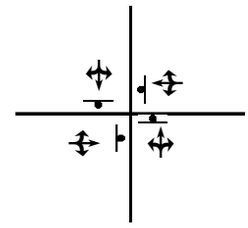
3 Mission Blvd/Valle Vista Ave–Project Dwy



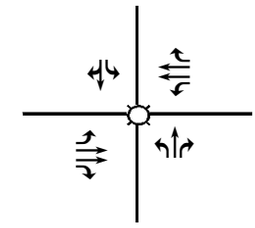
4 Mission Blvd/Industrial Pkwy W



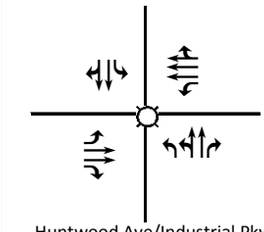
5 Mission Blvd/Whipple Rd



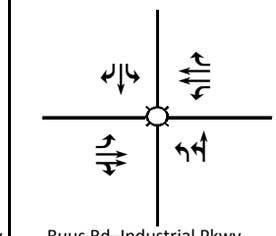
6 Dixon St/Valle Vista Ave



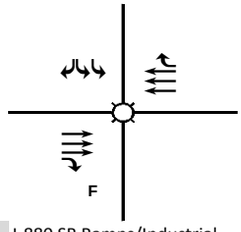
7 Huntwood Ave/Tennyson Rd



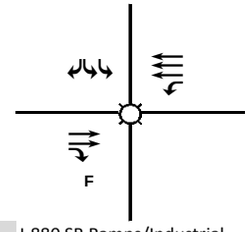
8 Huntwood Ave/Industrial Pkwy W



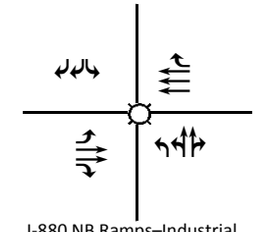
9 Ruus Rd–Industrial Pkwy SW/Industrial Pkwy W



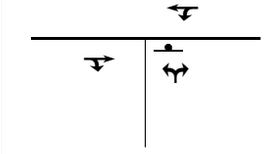
10 I-880 SB Ramps/Industrial Pkwy W - Alternative 1



10 I-880 SB Ramps/Industrial Pkwy W - Alternative 2



12 I-880 NB Ramps–Industrial Pkwy SW/Whipple Rd



13 Project Dwy/Tennyson Rd

LSA

FIGURE 15

LEGEND

Signal

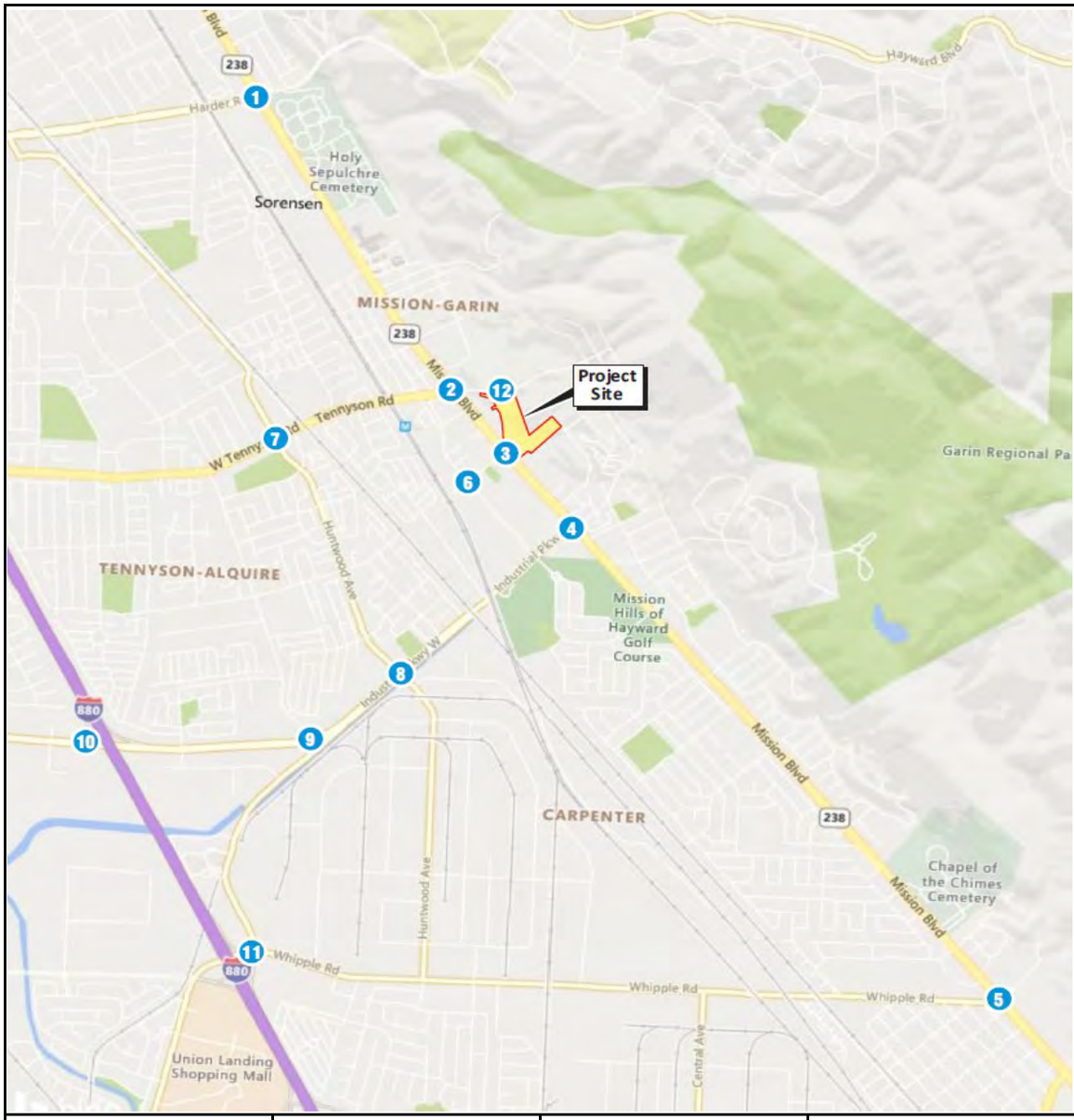
Stop Sign

F Free Right Turn

Project Driveway

29212 Mission Boulevard

Cumulative with I-880 Improvements Intersection Geometry



1 Mission Blvd/Harder Road

196 / 302 ↲	2387 / 1831 ↓	80 / 169 ↳
383 / 481 ⤵	276 / 328 →	410 / 542 ⤵
340 / 430 ⤴	1645 / 2276 ↑	259 / 327 ⤷
⤴ 54 / 79	← 136 / 232	⤴ 255 / 197

2 Mission Blvd/Tennyson Road

371 / 523 ↲	2535 / 1823 ↓	15 / 62 ↳
484 / 528 ⤵	3 / 7 →	392 / 425 ⤵
365 / 571 ⤴	1739 / 2323 ↑	5 / 2 ⤷
⤴ 0 / 15	← 16 / 19	⤴ 24 / 14

3 Mission Blvd/Valle Vista Ave-Proj. Dwy

40 / 96 ↲	2979 / 2220 ↓	
62 / 29 ⤵	88 / 76 ⤵	
67 / 115 ⤴	2100 / 2956 ↑	

4 Mission Blvd/Industrial Parkway W.

849 / 444 ↲	2083 / 1698 ↓	113 / 152 ↳
402 / 683 ⤵	167 / 191 →	496 / 807 ⤵
639 / 623 ⤴	1467 / 2243 ↑	11 / 22 ⤷
⤴ 286 / 145	← 232 / 146	⤴ 25 / 14

5 Mission Blvd/Whipple Road

113 / 155 ↲	2723 / 1733 ↓	26 / 30 ↳
169 / 230 ⤵	20 / 20 →	337 / 434 ⤵
456 / 414 ⤴	1392 / 2803 ↑	37 / 47 ⤷
⤴ 24 / 18	← 19 / 12	⤴ 69 / 51

6 Dixon Street/Valle Vista Avenue

11 / 11 ↲	658 / 607 ↓	83 / 88 ↳
13 / 11 ⤵	3 / 8 →	11 / 11 ⤵
5 / 21 ⤴	594 / 664 ↑	69 / 60 ⤷
⤴ 70 / 98	← 0 / 5	⤴ 67 / 95

7 Huntwood Avenue/Tennyson Road

58 / 56 ↲	308 / 226 ↓	212 / 126 ↳
50 / 140 ⤵	987 / 1260 →	144 / 148 ⤵
202 / 189 ⤴	209 / 492 ↑	257 / 441 ⤷
⤴ 72 / 66	← 1230 / 1082	⤴ 365 / 431

8 Huntwood Avenue/Industrial Parkway W.

186 / 152 ↲	630 / 235 ↓	148 / 138 ↳
147 / 404 ⤵	677 / 1676 →	464 / 260 ⤵
242 / 586 ⤴	180 / 848 ↑	123 / 460 ⤷
⤴ 77 / 157	← 1731 / 1007	⤴ 520 / 176

9 Ruus Road/Industrial Parkway W.

113 / 74 ↲	694 / 362 ↓	44 / 33 ↳
53 / 119 ⤵	929 / 1501 →	237 / 240 ⤵
512 / 874 ⤴	196 / 802 ↑	89 / 43 ⤷
⤴ 33 / 58	← 1236 / 1004	⤴ 952 / 758

10 I-880 Southbound Ramps/Industrial Parkway W.

397 / 379 ↲	306 / 454 ↳	
1010 / 1628 →	218 / 499 ⤵	
⤴ 579 / 292	← 2109 / 1793	

11 I-880 Northbound Ramps/Whipple Road

1497 / 1131 ↲	668 / 622 ↳	
626 / 1210 ⤵	986 / 925 →	
314 / 129 ⤴	449 / 552 ↑	324 / 119 ⤷
⤴ 362 / 803	← 1059 / 1147	

12 Project Dwy/Tennyson Rd

Future Intersection

LSA

FIGURE 16a

LEGEND

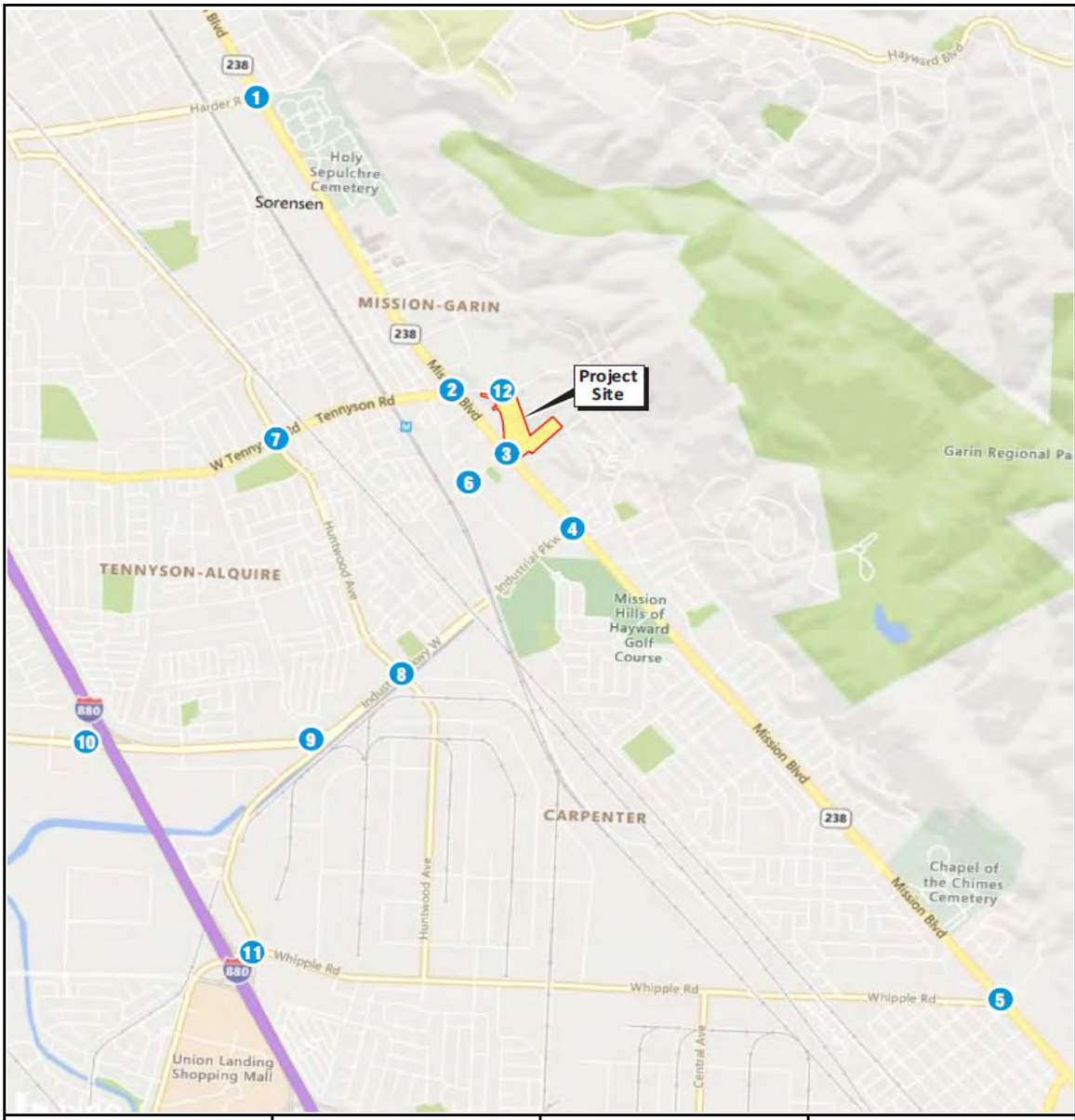
XXX / YYY AM / PM Volume

Project Driveway

29212 Mission Boulevard

Cumulative with I-880 Improvements Intersection Peak-Hour Volumes

Alternative 1



196 / 302	2387 / 1831	80 / 169	↰ 54 / 79 ← 136 / 232 ↖ 255 / 197
383 / 481 ↲			
276 / 328 →			
410 / 542 ↴			
340 / 430	1645 / 2276	259 / 327	

1 Mission Blvd/Harder Road

371 / 523	2535 / 1823	15 / 62	↰ 0 / 15 ← 16 / 19 ↖ 24 / 14
484 / 528 ↲			
3 / 7 →			
392 / 425 ↴			
365 / 571	1739 / 2323	5 / 2	

2 Mission Blvd/Tennyson Road

40 / 96	2979 / 2220		
62 / 29 ↲			
88 / 76 ↴			
67 / 115	2100 / 2956		

3 Mission Blvd/Valle Vista Ave-Proj. Dwy

849 / 444	2083 / 1698	113 / 152	↰ 286 / 145 ← 232 / 146 ↖ 25 / 14
402 / 683 ↲			
167 / 191 →			
496 / 807 ↴			
639 / 623	1467 / 2243	11 / 22	

4 Mission Blvd/Industrial Parkway W.

113 / 155	2723 / 1733	26 / 30	↰ 24 / 18 ← 19 / 12 ↖ 69 / 51
169 / 230 ↲			
20 / 20 →			
337 / 434 ↴			
456 / 414	1392 / 2803	37 / 47	

5 Mission Blvd/Whipple Road

11 / 11	658 / 607	83 / 68	↰ 70 / 98 ← 0 / 5 ↖ 67 / 95
13 / 11 ↲			
3 / 8 →			
11 / 11 ↴			
5 / 21	594 / 664	69 / 60	

6 Dixon Street/Valle Vista Avenue

58 / 56	308 / 226	212 / 126	↰ 72 / 66 ← 1230 / 1082 ↖ 365 / 431
50 / 140 ↲			
987 / 1260 →			
144 / 148 ↴			
202 / 189	209 / 492	257 / 441	

7 Huntwood Avenue/Tennyson Roa

186 / 152	630 / 235	148 / 138	↰ 77 / 157 ← 1731 / 1007 ↖ 520 / 176
147 / 404 ↲			
677 / 1676 →			
464 / 260 ↴			
242 / 586	180 / 848	123 / 460	

8 Huntwood Avenue/Industrial Parkway W.

113 / 74	694 / 362	44 / 33	↰ 33 / 58 ← 1236 / 1004 ↖ 952 / 758
53 / 119 ↲			
929 / 1501 →			
237 / 240 ↴			
512 / 874	196 / 802	89 / 43	

9 Ruus Road/Industrial Parkway W.

397 / 379	306 / 454		← 2109 / 1793 ↖ 579 / 292
1010 / 1628 →			
218 / 499 ↴			

10 I-880 Southbound Ramps/Industrial Parkway W.

1497 / 1131	668 / 622		↰ 362 / 803 ← 1059 / 1147
626 / 1210 ↲			
986 / 925 →			
314 / 129	449 / 552	324 / 119	

11 I-880 Northbound Ramps/Whipple Road

Future Intersection

12 Project Dwy/Tennyson Rd

LSA

FIGURE 16b

LEGEND

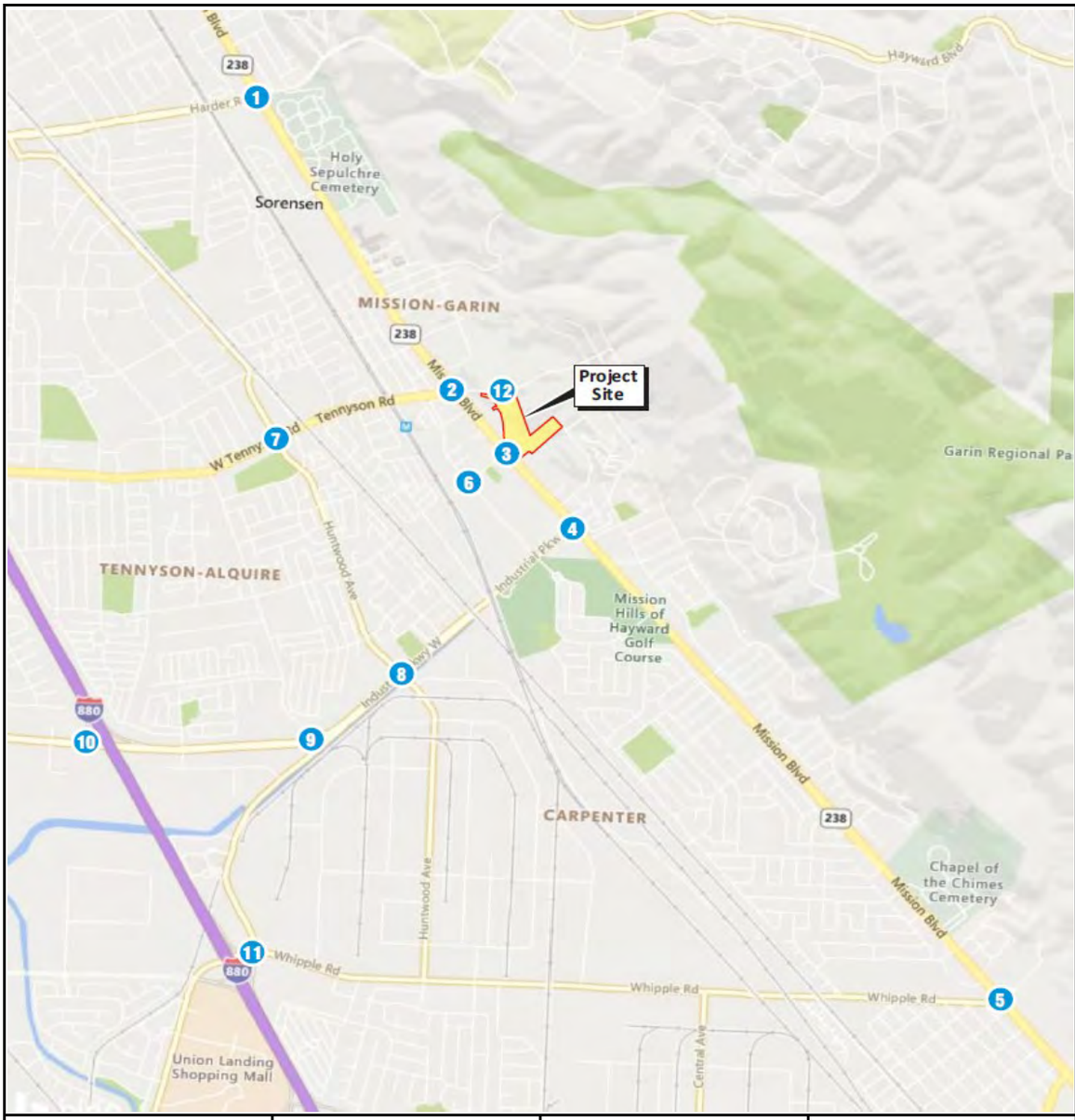
XXX / YYY AM / PM Volume

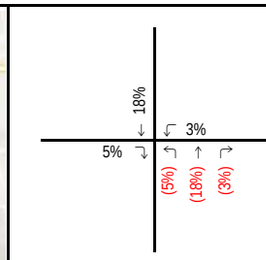
Project Driveway

29212 Mission Boulevard

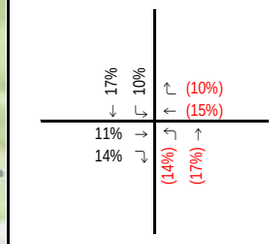
Cumulative with I-880 Improvements Intersection Peak-Hour Volumes

Alternative 2

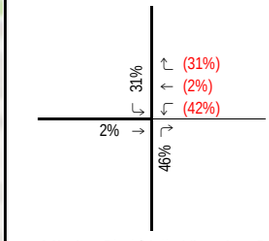




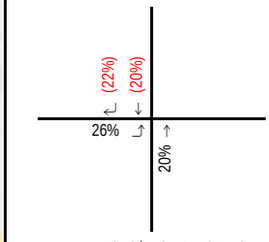
1 Mission Blvd/Harder Road



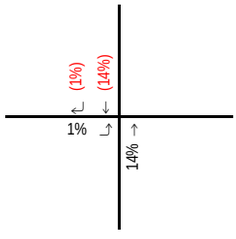
2 Mission Blvd/Tennyson Road



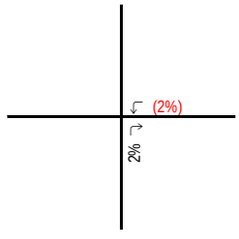
3 Mission Blvd/Valle Vista Ave-Proj. Dwy



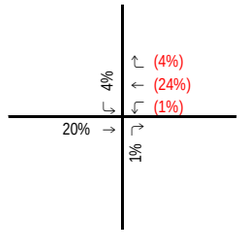
4 Mission Blvd/Industrial Parkway W.



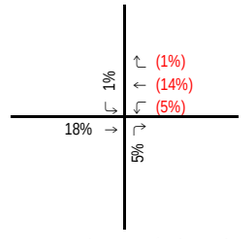
5 Mission Blvd/Whipple Road



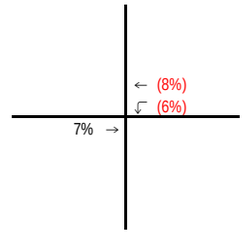
6 Dixon Street/Valle Vista Avenue



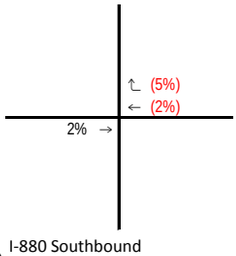
7 Huntwood Avenue/Tennyson Road



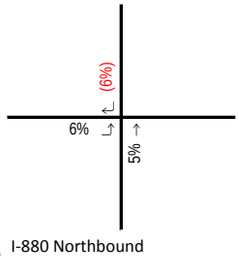
8 Huntwood Avenue/Industrial Parkway W.



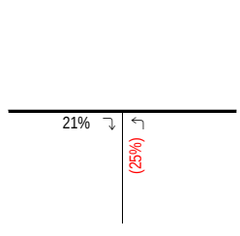
9 Ruus Road/Industrial Parkway W.



10 I-880 Southbound Ramps/Industrial Parkway W.



11 I-880 Northbound Ramps/Whipple Road



12 Project Dwy/Tennyson Rd

LSA

FIGURE 17

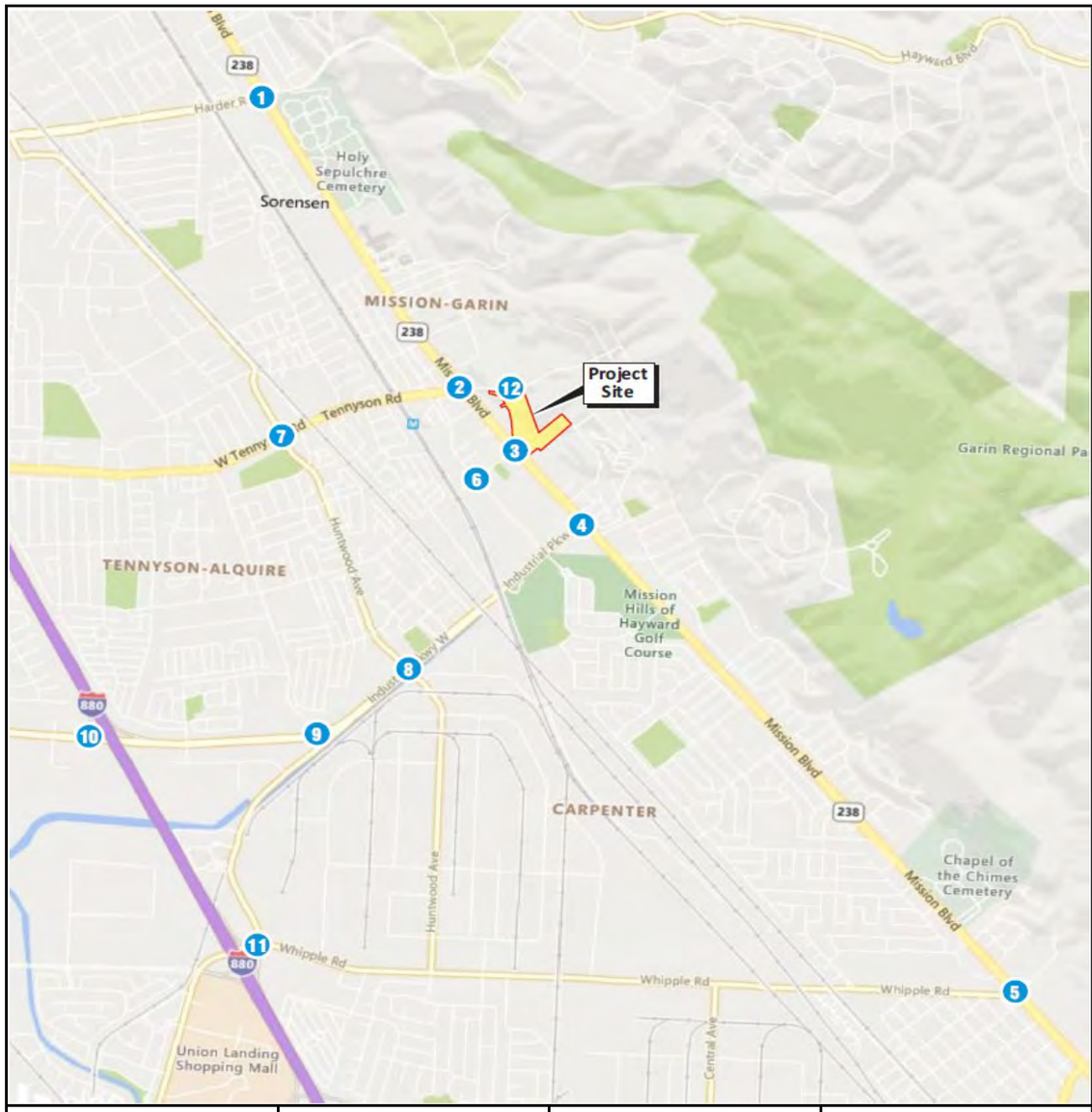
LEGEND

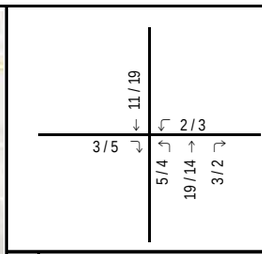
XX%/(YY%) Inbound/Outbound Trip Distribution

Project Driveway

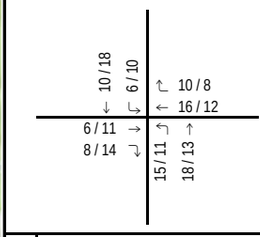
29212 Mission Boulevard

Project Trip Distribution with I-880 Improvements

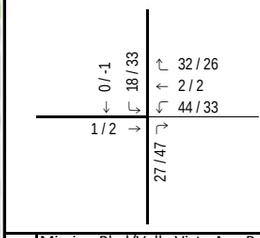




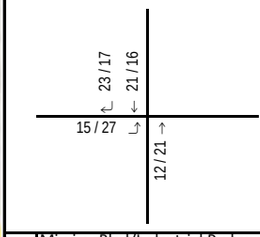
1 Mission Blvd/Harder Road



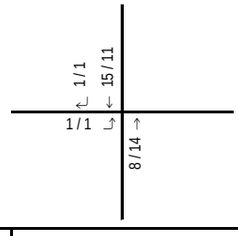
2 Mission Blvd/Tennyson Road



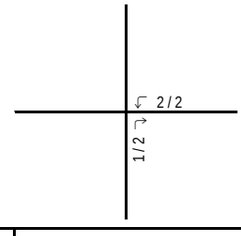
3 Mission Blvd/Valle Vista Ave-Proj. Dwy



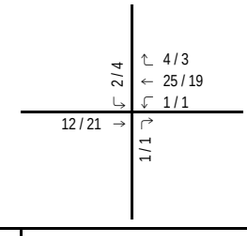
4 Mission Blvd/Industrial Parkway W.



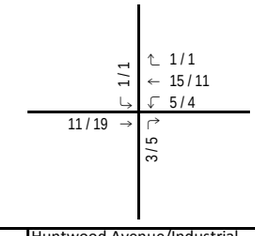
5 Mission Blvd/Whipple Road



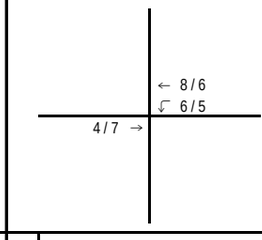
6 Dixon Street/Valle Vista Avenue



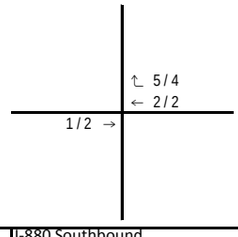
7 Huntwood Avenue/Tennyson Road



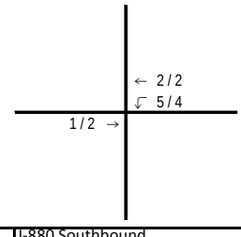
8 Huntwood Avenue/Industrial Parkway W.



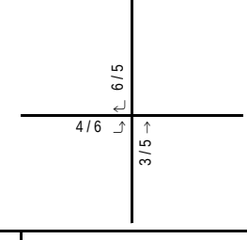
9 Ruus Road/Industrial Parkway W.



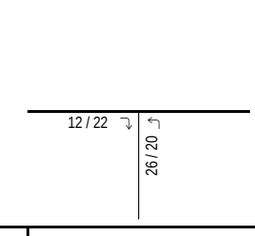
10 I-880 Southbound Ramps/Industrial Parkway W. (Alternative 1)



10 I-880 Southbound Ramps/Industrial Parkway W. (Alternative 2)



11 I-880 Northbound Ramps/Whipple Road



12 Project Dwy/Tennyson Rd

LSA

FIGURE 18

LEGEND

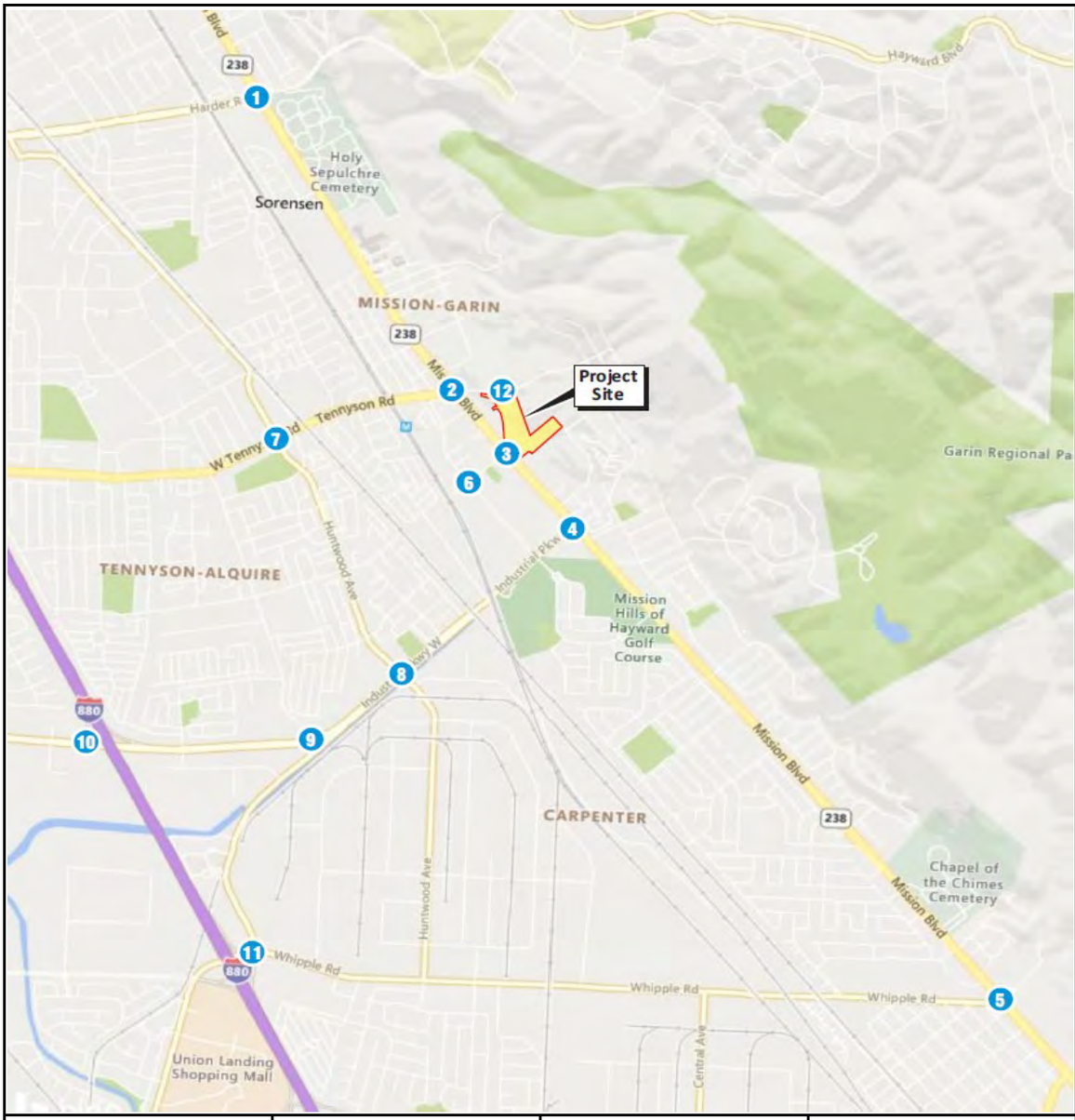
XXX / YYY AM / PM Volume

Project Driveway

Negative trips at intersection #3 are pass-by trips.

29212 Mission Boulevard

Project Trip Assignment with I-880 Improvements



196 / 302	2398 / 1850	80 / 169
383 / 481	276 / 328	413 / 547

54 / 79
136 / 232
257 / 200

345 / 434	1664 / 2290	262 / 329

1 Mission Blvd/Harder Road

371 / 523	2545 / 1841	21 / 72
484 / 528	9 / 18	400 / 439

10 / 23
32 / 31
24 / 14

380 / 582	1757 / 2336	5 / 2

2 Mission Blvd/Tennyson Road

40 / 96	2979 / 2219	18 / 33
62 / 29	1 / 2	88 / 76

32 / 26
2 / 2
44 / 33

67 / 115	2100 / 2956	27 / 47

3 Mission Blvd/Valle Vista Ave-Proj. Dwy

872 / 461	2104 / 1714	113 / 152
417 / 710	167 / 191	496 / 807

286 / 145
232 / 146
25 / 14

639 / 623	1479 / 2264	11 / 22

4 Mission Blvd/Industrial Parkway W.

114 / 156	2738 / 1744	26 / 30
170 / 231	20 / 20	337 / 434

24 / 18
19 / 12
69 / 51

456 / 414	1400 / 2817	37 / 47

5 Mission Blvd/Whipple Road

11 / 11	658 / 607	83 / 68
13 / 11	3 / 8	11 / 11

70 / 98
0 / 5
69 / 97

5 / 21	594 / 664	70 / 62

6 Dixon Street/Valle Vista Avenue

58 / 56	308 / 226	214 / 130
50 / 140	999 / 1281	144 / 148

76 / 69
1255 / 1101
366 / 432

202 / 189	209 / 492	258 / 442

7 Huntwood Avenue/Tennyson Roa

186 / 152	630 / 235	149 / 139
147 / 404	688 / 1695	464 / 260

78 / 158
1746 / 1018
525 / 180

242 / 586	180 / 848	126 / 465

8 Huntwood Avenue/Industrial Parkway W.

113 / 74	694 / 362	44 / 33
53 / 119	933 / 1508	237 / 240

33 / 58
1244 / 1010
958 / 763

512 / 874	196 / 802	89 / 43

9 Ruus Road/Industrial Parkway W.

397 / 379	306 / 454
1011 / 1630	218 / 499

584 / 296
2111 / 1795

10 I-880 Southbound Ramps/Industrial Parkway W.

1503 / 1136	668 / 622
630 / 1216	986 / 925

362 / 803
1059 / 1147

314 / 129	452 / 557	324 / 119

11 I-880 Northbound Ramps/Whipple Road

23 / 71
12 / 22

40 / 48

26 / 20

12 Project Dwy/Tennyson Rd

LSA

FIGURE 19a

LEGEND

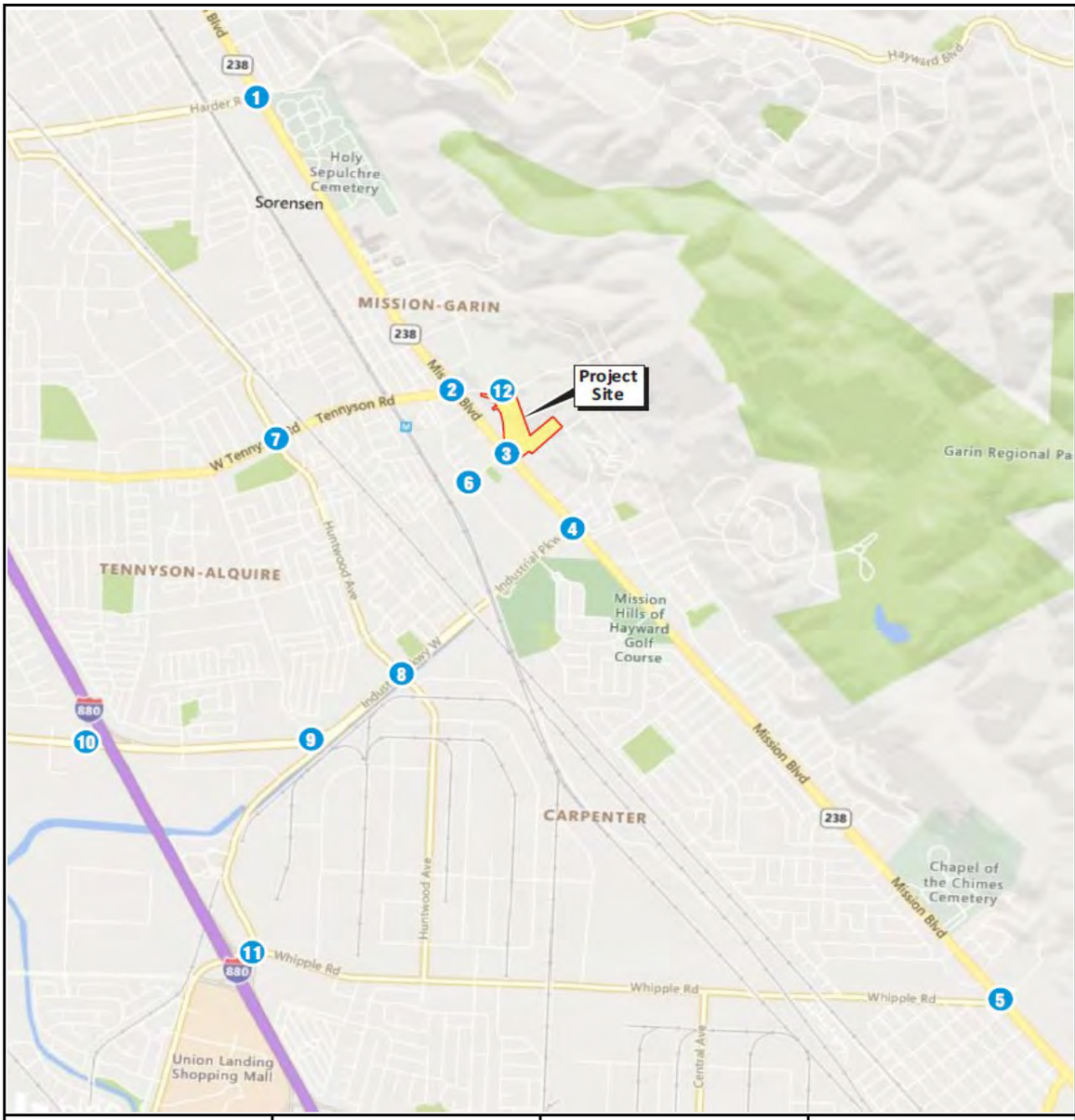
XXX / YYY AM / PM Volume

Project Driveway

29212 Mission Boulevard

Cumulative with I-880 Improvements Plus Project Intersection Peak-Hour Volumes Alternative 1

P:\HAY1701.06\Figures\Fig 19a- Cumulative with I-880 Improvements Intersection Peak-Hour Volumes (Alt 1).xlsx (9/18/2019)



196 / 302	2398 / 1850	80 / 169	
↲	↓	↳	
383 / 481 →			↱ 54 / 79
276 / 328 →			← 136 / 232
413 / 547 ↴			↰ 257 / 200
	345 / 434 ↰	1664 / 2290 ↑	262 / 329 ↱

1 Mission Blvd/Harder Road

371 / 523	2545 / 1841	21 / 72	
↲	↓	↳	
484 / 528 →			↱ 10 / 23
9 / 18 →			← 32 / 31
400 / 439 ↴			↰ 24 / 14
	380 / 582 ↰	1757 / 2336 ↑	5 / 2 ↱

2 Mission Blvd/Tennyson Road

40 / 96	2979 / 2219	18 / 33	
↲	↓	↳	
62 / 29 →			↱ 32 / 26
1 / 2 →			← 2 / 2
88 / 76 ↴			↰ 44 / 33
	67 / 115 ↰	2100 / 2956 ↑	27 / 47 ↱

3 Mission Blvd/Valle Vista Ave-Proj. Dwy

872 / 461	2104 / 1714	113 / 152	
↲	↓	↳	
417 / 710 →			↱ 286 / 145
167 / 191 →			← 232 / 146
496 / 807 ↴			↰ 25 / 14
	639 / 623 ↰	1479 / 2264 ↑	11 / 22 ↱

4 Mission Blvd/Industrial Parkway W.

114 / 156	2738 / 1744	26 / 30	
↲	↓	↳	
170 / 231 →			↱ 24 / 18
20 / 20 →			← 19 / 12
337 / 434 ↴			↰ 69 / 51
	456 / 414 ↰	1400 / 2817 ↑	37 / 47 ↱

5 Mission Blvd/Whipple Road

11 / 11	658 / 607	83 / 68	
↲	↓	↳	
13 / 11 →			↱ 70 / 98
3 / 8 →			← 0 / 5
11 / 11 ↴			↰ 69 / 97
	5 / 21 ↰	594 / 664 ↑	70 / 62 ↱

6 Dixon Street/Valle Vista Avenue

58 / 56	308 / 226	214 / 130	
↲	↓	↳	
50 / 140 →			↱ 76 / 69
999 / 1281 →			← 1255 / 1101
144 / 148 ↴			↰ 366 / 432
	202 / 189 ↰	209 / 492 ↑	258 / 442 ↱

7 Huntwood Avenue/Tennyson Roa

186 / 152	630 / 235	149 / 139	
↲	↓	↳	
147 / 404 →			↱ 78 / 158
688 / 1695 →			← 1746 / 1018
464 / 260 ↴			↰ 525 / 180
	242 / 586 ↰	180 / 848 ↑	126 / 465 ↱

8 Huntwood Avenue/Industrial Parkway W.

113 / 74	694 / 362	44 / 33	
↲	↓	↳	
53 / 119 →			↱ 33 / 58
933 / 1508 →			← 1244 / 1010
237 / 240 ↴			↰ 958 / 763
	512 / 874 ↰	196 / 802 ↑	89 / 43 ↱

9 Ruus Road/Industrial Parkway W.

397 / 379	306 / 454	
↲	↳	
1011 / 1630 →		← 2111 / 1795
218 / 499 ↴		↰ 584 / 296

10 I-880 Southbound Ramps/Industrial Parkway W.

1503 / 1136	668 / 622	
↲	↳	
630 / 1216 →		↱ 362 / 803
986 / 925 →		← 1059 / 1147
	314 / 129 ↰	452 / 557 ↑ 324 / 119 ↱

11 I-880 Northbound Ramps/Whipple Road

	← 40 / 48
23 / 71 →	
12 / 22 ↴	26 / 20 ↰

12 Project Dwy/Tennyson Rd

LSA

FIGURE 19b

LEGEND

XXX / YYY AM / PM Volume

Project Driveway

29212 Mission Boulevard

Cumulative with I-880 Improvements Plus Project Intersection Peak-Hour Volumes Alternative 2

Table H summarizes the results of the Cumulative with I-880 Improvement alternatives LOS. Appendix F provides the LOS calculation worksheets for the I-880 improvement alternatives.

As Table H indicates, the study area intersections are forecast to operate at an acceptable LOS during the peak hours, with the exception of the following intersections:

- Mission Boulevard (SR-238)/Harder Road (LOS F in the a.m. and p.m. peak hours)
- Mission Boulevard (SR-238)/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Mission Boulevard (SR-238)/Whipple Road (LOS F in the a.m. peak hour)
- Dixon Street/Valle Vista Avenue (LOS F in the a.m. and p.m. peak hours)
- Huntwood Avenue/Tennyson Road (LOS F in the a.m. and p.m. peak hours)
- Huntwood Avenue/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Ruus Road/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- I-880 Southbound Ramps/Industrial Parkway West (LOS F in the a.m. and p.m. peak hours)
- Industrial Parkway Southwest/Whipple Avenue (LOS F in the a.m. and p.m. peak hours)

Because the project would increase the deficient a.m. peak-hour delay by more than 5 seconds at Ruus Road/Industrial Parkway West, a significant impact would occur at this intersection. Recommended improvement measures to reduce the impacts to less than significant levels are described later in this TIA.

INTERSECTION QUEUEING ANALYSIS

LSA analyzed the 95th percentile queues of the turn lanes of the study area intersections for anticipated inbound and outbound project turn movements using the HCM 2000 methodology. The purpose of this analysis is to determine the adequacy of the existing turn storage capacity and identify the potential for vehicles to spill back into the through lanes. The 95th-percentile queue is defined to be the queue length that has only a 5 percent probability of being exceeded during the analysis time period. It is a useful parameter for determining the appropriate length of turn pockets, but it is not typical of what an average driver would experience. Tables I, J, K, and L summarize the intersection queuing analysis for Existing (2019), Background (2024), Cumulative (2035) (no project and plus project), and Cumulative (2035 with I-880 Improvement) conditions, respectively.

Existing and Existing Plus Project Queues

The specific intersections and turn movements where the existing vehicle queues exceed the available turn lane storage lengths are summarized in Table I. As shown on this table, the vehicle queues currently exceed the storage lengths at 9 turn lanes (at 4 total intersections). However, the project would contribute 1 vehicle (25 feet [ft]) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Existing conditions.

Table H: Cumulative Plus Project with I-880 Improvements Intersection Levels of Service Summary

No.	Study Intersection	Control	No Project				Plus Project				Peak-Hour Δ		Significant Impact?
			Peak Hour	Approach	Delay	LOS	Peak Hour	Approach	Delay	LOS	Peak Hour	Delay	
1	Mission Boulevard (SR-238)/ Harder Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	4.6	
2	Mission Boulevard (SR-238)/ Tennyson Road	Signal	AM	–	40.1	D	AM	–	43.3	D	AM	3.2	No
			PM	–	38.6	D	PM	–	39.9	D	PM	1.3	
3	Mission Boulevard (SR-238)/ Valle Vista Ave	Signal	AM	–	50.1	D	AM	–	54.2	D	AM	4.1	No
			PM	–	45.6	D	PM	–	41.7	D	PM	-3.9[1]	
4	Mission Boulevard (SR-238)/ Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	5.0	No
			PM	–	69.2	E	PM	–	73.0	F	PM	3.8	
5	Mission Boulevard (SR-238)/ Whipple Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	2.2	No
			PM	–	51.2	D	PM	–	52.8	D	PM	1.6	
6	Dixon Street/Valle Vista Avenue	AWSC	AM	SB	>50.0	F	AM	SB	>50.0	F	AM	0.9	No
			PM	NB	>50.0	F	PM	NB	>50.0	F	PM	1.5	
7	Huntwood Avenue/Tennyson Road	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	4	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3.8	
8	Huntwood Avenue/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	1.4	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	3	
9	Russ Road/Industrial Parkway West	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	7.0	**Yes**
			PM	–	>80.0	F	PM	–	>80.0	F	PM	2.9	
10	I-880 SB Ramps/Industrial Parkway West – Alternative 1	Signal	AM	–	16.5	B	AM	–	16.5	B	AM	0	No
			PM	–	15.6	B	PM	–	17.1	B	PM	0	
	I-880 SB Ramps/Industrial Parkway West – Alternative 2		AM		46.2	D	AM		46.7	D	AM	0.5	No
			PM		65.6	E	PM		65.8	E	PM	0.2	
11	Industrial Parkway Southwest/ Whipple Avenue	Signal	AM	–	>80.0	F	AM	–	>80.0	F	AM	2.6	No
			PM	–	>80.0	F	PM	–	>80.0	F	PM	2.2	
12	Project Driveway & Tennyson Road	OWSC	*Future Intersection*				AM	NB	9.0	A	AM	N/A	N/A
							PM	NB	9.3	A	PM	N/A	

Note: Delay is reported in seconds per vehicle.
= Unsatisfactory LOS

[1] Synchro calculates the average delay by taking into account the delay of all movements and the number of vehicles at an intersection. If adding Project traffic to a movement does not increase delay significantly, the overall average delay may go down.

Δ = change
LOS = level of service
N/A = not applicable (future intersection)
NB = northbound
AWSC = all-way stop control
OWSC = one-way stop control
SB = southbound

Table I: Existing Plus Project Intersection Queueing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	247	351	282	408	252	364	286	414
		Dual EBL	100[1]	286	174	259	156	286	175	259	156
		EBR	280	328	102	300	83	331	106	305	83
		SBL	495	23	44	58	84	23	43	58	84
		Dual WBL	235	146	101	98	72	148	102	101	73
		WBR	140	29	0	38	10	29	0	38	10
2	Mission Boulevard/Tennyson Road	Dual NBL	510	212	139	325	197	227	147	336	203
		Dual EBL	280[2]	317	192	293	179	317	192	293	178
		EBR	210	270	83	214	74	278	84	228	76
		SBL	235	9	28	32	64	15	38	42	78
		SBR	215	227	57	296	50	227	61	296	52
3	Mission Boulevard /Valle Vista Ave	NBL	225	59	32	47	62	59	100	47	85
		SBL	70	0	0	0	0	18	43	33	65
		WBR	50	0	0	0	0	32	21	26	12
4	Mission Boulevard /Industrial Parkway	NBL	290	298	140	270	131	298	152	270	131
		Dual EBL	200[3]	245	128	495	198	258	137	518	212
		EBR	110	233	15	437	54	233	15	437	54
		SBL	215	104	97	145	150	104	97	145	150
		WBL	125	18	30	11	20	18	30	11	20
		WBR	205	269	62	138	8	269	62	138	8
5	Whipple Road/Mission Boulevard	Dual NBL	415	283	98	266	93	283	98	266	93
		EBR	115	224	53	271	57	224	53	271	57
		SBL	290	9	16	17	24	9	16	17	24
7	Huntwood Avenue/Tennyson Road	NBL	265	91	109	151	159	91	110	151	163
		NBR	100	112	43	228	57	113	43	229	58
		EBL	170	43	65	116	132	43	66	116	133
		EBR	150	109	36	94	283	109	36	94	33
		SBL	100	169	175	74	94	171	178	78	101
		WBL	190	208	213	195	195	209	215	196	199
		WBR	100	47	16	39	14	51	19	42	16

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	225	209	140	446	605	209	140	446
		NBR	100[1]	225	109	49	298	140	109	50	298
		EBL	280	250	73	99	289	495	73	99	289
		EBR	495	250	377	72	194	94	377	72	194
		SBL	235	150	84	111	74	128	85	112	75
		WBL	140	245	376	498	117	179	381	510	121
9	Huntwood Avenue/Industrial Parkway	NBL	140	39	58	171	172	39	58	171	174
		EBL	190	27	16	62	34	27	16	62	34
		WBL	255	363	366	293	307	369	374	298	314
		WBR	165	31	9	55	13	31	9	55	13
10	Industrial Parkway West/ I-880 SB Ramp	EBL	350	148	145	348	358	148	145	348	358
		WBR	160	493	264	217	106	498	267	221	109
		SBL	265	291	233	405	358	291	233	405	358
		SBR	300	378	64	261	55	378	64	261	55
11	I-880 NB Ramp & Whipple Road	NBL	340	529	561	185	165	529	561	185	165
		NBR	390	322	229	113	47	322	229	113	47
		Dual EBL	175	261	170	674	489	265	173	680	495
		SBL	245	306	409	240	402	306	409	240	402
		WBR	210	135	54	303	157	135	54	303	158

Note: shaded cells indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.
EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet)

Table J: Background Plus Project Intersection Queuing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	278	444	345	579	283	455	349	586
		Dual EBL	100[1]	319	199	337	204	319	199	337	204
		EBR	280	356	162	390	164	359	167	395	177
		SBL	495	41	70	86	124	41	70	86	124
		Dual WBL	235	180	124	124	91	182	125	127	93
		WBR	140	37	7	48	21	37	7	48	21
2	Mission Boulevard/Tennyson Road	Dual NBL	510	256	162	388	229	271	170	399	234
		Dual EBL	280[2]	366	221	355	214	366	221	355	214
		EBR	210	306	89	270	83	314	89	284	84
		SBL	235	11	31	42	78	17	42	52	92
		SBR	215	268	93	356	57	268	98	356	59
3	Mission Boulevard /Valle Vista Ave	NBL	225	62	76	66	80	62	122	66	109
		SBL	70	0	0	0	0	18	43	33	66
		WBR	50	0	0	0	0	32	21	26	12
4	Mission Boulevard /Industrial Parkway	NBL	290	412	254	396	207	412	255	396	207
		Dual EBL	200[3]	296	197	553	268	309	211	576	282
		EBR	110	320	61	550	61	320	61	550	61
		SBL	215	107	133	148	176	107	133	148	176
		WBL	125	20	43	12	22	20	43	12	22
		WBR	205	274	85	140	8	274	87	140	8
5	Whipple Road/Mission Boulevard	Dual NBL	415	336	112	301	103	336	112	301	103
		EBR	115	259	57	321	62	259	57	321	62
		SBL	290	14	22	21	28	14	22	21	28
7	Huntwood Avenue/Tennyson Road	NBL	265	125	177	166	216	125	177	166	216
		NBR	100	156	51	298	67	157	51	299	67
		EBL	170	46	70	118	142	46	70	118	142
		EBR	150	120	37	111	36	120	37	111	36
		SBL	100	182	200	90	157	184	202	94	165
		WBL	190	255	271	263	279	256	271	264	281
		WBR	100	56	21	44	16	60	24	47	18

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	224	161	498	729	224	161	498	734
		NBR	100[1]	115	51	354	204	115	51	354	203
		EBL	280	95	127	317	573	95	127	317	576
		EBR	495	402	75	211	120	402	75	211	122
		SBL	235	103	138	94	158	104	138	95	159
		WBL	140	422	610	138	206	427	620	142	212
9	Huntwood Avenue/Industrial Parkway	NBL	140	234	315	413	526	234	315	413	526
		EBL	190	27	17	63	36	27	17	63	36
		WBL	255	545	474	437	440	551	483	442	448
		WBR	165	32	10	56	13	32	10	56	13
10	Industrial Parkway West/ I-880 SB Ramp	EBL	350	172	163	377	401	172	163	377	401
		WBR	160	524	379	235	135	529	384	239	137
		SBL	265	296	238	440	426	296	238	440	426
		SBR	300	383	64	293	58	383	64	293	58
11	I-880 NB Ramp & Whipple Road	NBL	340	537	572	188	167	537	572	188	167
		NBR	390	328	236	115	49	328	236	115	49
		Dual EBL	175	365	269	847	654	369	273	853	660
		SBL	245	432	639	357	637	432	639	357	637
		WBR	210	209	64	455	438	209	64	455	440

Note: shaded cells indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.
EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet)

Table K: Cumulative Plus Project Intersection Queueing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	347	624	484	923	352	636	488	930
		Dual EBL	100[1]	390	248	508	358	390	249	508	358
		EBR	280	416	340	589	655	419	347	594	667
		SBL	495	79	122	148	209	79	122	148	209
		Dual WBL	235	256	171	181	128	258	172	184	130
		WBR	140	55	29	70	46	55	29	70	46
2	Mission Boulevard/Tennyson Road	Dual NBL	510	352	211	526	306	367	219	537	313
		Dual EBL	280[2]	475	301	491	318	475	301	491	318
		EBR	210	384	99	392	100	392	100	406	102
		SBL	235	15	38	63	106	21	48	73	118
		SBR	215	358	190	487	202	358	193	487	205
3	Mission Boulevard /Valle Vista Ave	NBL	225	67	153	109	119	158	158	109	188
		SBL	70	0	0	0	0	18	43	33	67
		WBR	50	0	0	0	0	32	21	26	0
4	Mission Boulevard /Industrial Parkway	NBL	290	663	550	672	502	663	550	672	522
		Dual EBL	200[3]	408	378	682	512	421	392	705	545
		EBR	110	512	91	797	172	512	91	797	187
		SBL	215	114	174	153	293	114	174	153	297
		WBL	125	25	58	14	38	25	58	14	38
		WBR	205	284	246	145	91	284	246	145	91
5	Whipple Road/Mission Boulevard	Dual NBL	415	454	146	378	123	454	146	378	123
		EBR	115	337	63	430	90	337	63	430	90
		SBL	290	26	32	31	37	26	32	31	37
7	Huntwood Avenue/Tennyson Road	NBL	265	199	363	200	330	199	364	200	331
		NBR	100	253	63	452	148	254	63	453	149
		EBL	170	52	78	121	144	52	78	121	144
		EBR	150	143	40	147	51	143	40	147	52
		SBL	100	212	301	124	270	214	305	128	276
		WBL	190	359	455	411	548	360	456	412	548
		WBR	100	75	32	1044	24	79	34	58	26

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	257	212	611	972	257	210	611	972
		NBR	100[1]	115	56	354	417	115	56	354	417
		EBL	280	143	195	378	720	143	194	378	720
		EBR	495	457	76	247	170	457	76	247	171
		SBL	235	146	246	138	262	147	248	139	264
		WBL	140	524	928	183	268	529	945	187	273
9	Huntwood Avenue/Industrial Parkway	NBL	140	664	873	944	1215	664	873	944	1215
		EBL	190	28	19	65	41	28	19	65	41
		WBL	255	945	1085	754	979	951	1093	759	984
		WBR	165	33	10	58	21	33	10	58	21
10	Industrial Parkway West/ I-880 SB Ramp	EBL	350	226	203	440	497	226	203	440	497
		WBR	160	592	555	275	185	597	560	279	189
		SBL	265	306	252	517	542	306	252	517	542
		SBR	300	393	65	363	64	393	65	363	64
11	I-880 NB Ramp & Whipple Road	NBL	340	555	601	194	171	555	601	194	171
		NBR	390	340	248	119	52	340	248	119	52
		Dual EBL	175	595	480	1,228	1012	599	485	1,234	1017
		SBL	245	710	1126	614	1134	710	1126	614	1134
		WBR	210	371	116	789	1084	371	116	789	1086

Note: indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.
EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet)

Table L: Cumulative with I-880 Improvements Plus Project Intersection Queuing Summary

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
1	Mission Boulevard/Harder Road	NBL	530	340	606	430	803	345	619	488	812
		Dual EBL	100[1]	383	244	481	326	383	244	508	326
		EBR	280	410	325	542	568	413	333	594	583
		SBL	495	80	123	169	237	80	123	148	237
		Dual WBL	235	255	170	197	137	257	171	184	139
		WBR	140	54	28	79	49	54	28	70	49
2	Mission Boulevard/Tennyson Road	Dual NBL	510	365	218	571	335	380	225	582	348
		Dual EBL	280[2]	484	311	528	357	484	311	528	357
		EBR	210	392	100	425	125	400	109	439	144
		SBL	235	15	38	62	105	21	48	72	117
		SBR	215	371	198	523	213	371	201	523	217
3	Mission Boulevard /Valle Vista Ave	NBL	225	67	81	115	125	67	81	115	203
		SBL	70	0	0	0	0	18	33	33	67
		WBR	50	0	0	0	0	32	18	26	0
4	Mission Boulevard /Industrial Parkway	NBL	290	639	521	623	471	639	532	623	471
		Dual EBL	200[3]	402	368	683	511	417	374	710	539
		EBR	110	496	87	807	189	496	86	807	189
		SBL	215	113	172	152	295	113	172	152	295
		WBL	125	25	58	14	38	25	58	14	38
		WBR	205	286	247	145	91	286	247	145	91
5	Whipple Road/Mission Boulevard	Dual NBL	415	456	147	414	134	456	147	414	134
		EBR	115	337	63	434	93	337	63	434	93
		SBL	290	26	32	30	36	26	32	30	36
7	Huntwood Avenue/Tennyson Road	NBL	265	202	374	189	310	202	375	189	310
		NBR	100	257	63	441	137	258	63	442	139
		EBL	170	50	76	140	161	50	76	140	161
		EBR	150	144	40	148	52	144	40	148	53
		SBL	100	212	300	126	273	214	305	130	281
		WBL	190	365	466	431	580	366	467	432	581
		WBR	100	72	31	66	32	76	33	69	33

ID	Intersection	Turn Movement	Storage Length (feet per lane)	No Project				Plus Project			
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
				Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)	Volume	Queue (feet)
8	Huntwood Avenue/Industrial Parkway	NBL	530	242	202	586	941	242	203	586	941
		NBR	100[1]	123	55	460	387	123	55	460	387
		EBL	280	147	199	404	782	147	200	404	782
		EBR	495	464	77	260	183	464	77	260	184
		SBL	235	148	251	138	262	149	255	139	264
		WBL	140	520	929	176	258	525	946	180	263
9	Huntwood Avenue/Industrial Parkway	NBL	140	512	682	874	1131	512	682	874	1131
		EBL	190	53	38	119	83	53	39	119	84
		WBL	255	952	1109	758	983	958	1116	763	988
		WBR	165	33	10	58	21	33	10	58	21
10	Industrial Parkway West/ I-880 SB Ramp – Alternative 1	EBR	300	218	25	499	36	218	25	499	36
		SBL	265	306	122	454	176	306	122	454	176
		SBR	300	397	436	379	394	397	436	379	394
		WBR	250	579	109	292	49	584	111	296	50
	Industrial Parkway West/ I-880 SB Ramp – Alternative 2	EBR	300	218	60	499	223	218	60	499	223
		SBL	265	306	126	454	193	306	126	454	193
		SBR	300	397	407	379	381	397	407	379	381
		WBL	250	579	642	292	339	584	651	296	349
11	I-880 NB Ramp & Whipple Road	NBL	340	314	277	129	118	314	277	129	118
		NBR	390	324	232	119	52	324	232	119	52
		Dual EBL	175	626	509	1210	995	630	512	1216	1001
		SBL	245	668	1055	622	1148	668	1055	622	1148
		WBR	210	362	124	803	1032	362	124	803	1035

Note: indicates 95th Percentile Queue exceeds storage length expressed in feet per lane. Assumes 25 feet per vehicle.
EBL = Eastbound Left Turn; EBR = Eastbound Right Turn; WBL = Westbound Left Turn; WBR = Westbound Right Turn;
NBL = Northbound Left Turn; SBL= Southbound Left Turn; SBR = Southbound Right Turn; NB = Northbound; SB = Southbound

[1] Storage length is the average of the two left-turn lanes (inner left lane: 100 feet; outer left lane: 100 feet).

[2] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 360 feet).

[3] Storage length is the average of the two left-turn lanes (inner left lane: 200 feet; outer left lane: 150 feet)

Background and Background Plus Project Queues

Similar to the Existing and Existing Plus Project conditions, the Background and Background Plus Project conditions will exceed the storage lengths at 13 turn lanes (at 6 total intersections), as shown in Table J. However, the project would contribute 1 vehicle (25 ft) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Background conditions.

Cumulative and Cumulative Plus Project Queues

Similar to the Background and Background Plus Project conditions, the Cumulative and Cumulative Plus Project conditions will exceed the storage lengths at 24 turn lanes (at 7 total intersections), as shown in Table K. However, the project would contribute 1 vehicle (25 ft) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Cumulative conditions.

Cumulative with I-880 Improvements and Cumulative with I-880 Improvements Plus Project Queues

Similar to the Cumulative and Cumulative Plus conditions, the Cumulative with I-880 Improvements and Cumulative with I-880 Improvements Plus Project conditions will exceed the storage lengths at 24 turn lanes (at 7 total intersections), as shown in Table L. However, the project would contribute 1 vehicle (25 ft) or less to each of these queues. Therefore, the project would not contribute significant queues to any of the study area intersections and turn movements under Cumulative with I-880 Improvements conditions.

ACCESS ANALYSIS AND ON-SITE CIRCULATION

Project Driveways

As shown on the conceptual site plan (Figure 2), access to the project site will be provided via a new driveway along Mission Boulevard, creating the fourth leg of the Mission Boulevard/Valle Vista Avenue intersection. A new unsignalized full-access driveway will also be provided on Tennyson Road.

Based on the truck-turning analysis, large trucks (wheelbase of 50 ft) would be able to make safe turns in/out of the signalized access of Valle Vista Avenue/Mission Boulevard and single-unit trucks (SU-30) would be able to make safe turns in/out of the unsignalized intersection of the proposed project driveway/Tennyson Drive. Truck turning templates for both access driveways are provided in Appendix H.

As previously discussed, an LOS analysis has been conducted for Mission Boulevard/Valle Vista Avenue–Project Driveway and Project Driveway/Tennyson Road. Based on the results of this analysis, these intersections are forecast to operate at satisfactory LOS E or better for Existing Plus Project, Background Plus Project, and Cumulative Plus Project conditions during both the a.m. and p.m. peak hours.

Sight Distance

A sight distance analysis was conducted at the proposed full-access driveway along Tennyson Road to ensure driver visibility and safety.

The Tennyson Road speed limit is 25 mph in the project vicinity. According to Table 6C-2 of the 2014 Caltrans' *California Manual on Uniform Traffic Control Devices* (CAMUTCD), the stopping sight distance for a roadway with a speed limit of 25 mph is 155 ft. The proposed driveway, as shown on Figure 2, is located approximately 800 ft east of the intersection of Mission Boulevard/Tennyson Road. The proposed driveway is located approximately 250 ft east of the horizontal curve on Tennyson Road. There are no sight distance obstructions along Tennyson Road, and more than 155 ft of sight distance is provided at the driveway.

Therefore, the project driveway would meet the minimum sight distance requirements specified in the CAMUTCD.

Parking

As previously described, the project site is comprised of two parcels. Parcel 1 is within the S-T4 District (South Hayward BART/Mission Boulevard Form-Based Code), where there are parking provisions for the maximum number of parking spaces per dwelling unit. According to the City of Hayward Municipal Code, Chapter 10, Article 24, Table 12A, for the S-T4 District the parking maximum for residential dwelling units are 2.0 spaces per dwelling unit and there are no parking minimums or maximums for non-residential functions. Parcel 1 includes the construction of 85 dwelling units (64 townhomes and 21 mixed-used flats) and 2,772 sf of commercial space. The maximum allowable parking for the residential dwelling units under City Municipal Code is 170 parking spaces. The project proposes 179 total parking spaces (161 residential spaces and 18 commercial spaces), which do not exceed the parking maximums set by the City Municipal Code.

Parcel 2 is within the CN (Neighborhood Commercial) and RM (Medium Density Residential) Districts. The Parcel 2 parking requirement was determined in accordance with the City's Municipal Code Sections 10-2.310 (Residential Uses) and 10-2.341 (Unknown Office, Retail and Service Uses). Parcel 2 includes the construction of 59 townhomes, 45 mixed-use flats, and 8,049 sf of commercial space (inclusive of daycare use). The parking rates for single-family dwelling units (e.g., townhomes) is 2.0 spaces per dwelling unit and for multi-family dwelling units (e.g., studio) is 1.0 space per dwelling unit. The parking rate for commercial space is 1 space per 200 sf. Under the City Municipal Code, the project requires 163 residential parking spaces and 41 commercial parking. The project proposes to provide a total of 229 parking spaces (184 residential spaces and 45 commercial spaces), which meets the parking requirements set by the City Municipal Code.

A total parking supply of 408 spaces would be provided by the project (345 residential spaces and 63 commercial spaces) for both parcels. Therefore, the project would provide parking consistent with the City's Municipal Code requirements.

Alternative Transportation

The project takes into account all modes of transportation. It does not conflict with any plans, ordinances, policies, or programs regarding public transit, bicycle, or pedestrian facilities. Mass

transit would not be affected. The project would provide pedestrian/bicycle connectivity to/from the local circulation network while ensuring the safety of motorists, pedestrians, and bicyclists. A public trail would be provided on the site that would allow pedestrians/cyclists to access park space and open space on the site, while also providing a path to the Tennyson Road access point.

With the construction of the proposed project, there will be no changes to the existing transit services and facilities, pedestrian circulation, and bicycle network. Transit facilities are accessible to and from the project site, with AC Transit bus stops along Mission Boulevard in the vicinity of Valle Vista Avenue and Tennyson Road. The project will maintain the existing Class II bikeways along Tennyson Road. To accommodate bicycle commuting, the project will provide bicycle parking on site.

Per the City's Municipal Code Section 7-1.10, any project that would result in an increase in the density of use of the property or increase the traffic generation on the street shall provide for the construction of curbs, gutters, sidewalks, street lighting, and street paving to meet the existing street pavement. The proposed project would be required to improve the existing sidewalk infrastructure along the project frontage on Mission Boulevard.

RECOMMENDATIONS

Based on the results of the queuing analysis in the Existing and Existing Plus Project conditions, the southbound left queue at the intersection of Huntwood Avenue/Tennyson Road would exceed the existing 100 ft left-turn lane in the a.m. and p.m. peak hours. While the project does not result in a significant impact, nor does it add more than one vehicle length to the queue, it is recommended that the signal timing be adjusted to provide more green time for the southbound left-turn movement to accommodate vehicles in the existing left-turn lane.

The proposed project would result in a significant impact at Ruus Road/Industrial Parkway West in the Cumulative with I-880 Improvements Plus Project condition. As shown in Table M, the project traffic would increase the a.m. peak-hour delay by 6.4 seconds at Ruus Road/Industrial Parkway West. This delay increase is above the 5-second threshold for intersections already operating at a deficient LOS. Therefore, an improvement is necessary at this intersection under the Cumulative with I-880 Improvements Plus Project condition.

LSA recommends optimizing the cycle length at Ruus Road/Industrial Parkway West, which would improve the overall delay at the intersection. With this improvement, the resultant a.m. and p.m. peak-hour delay would not exceed the 5-second threshold from the Cumulative with I-880 Improvements condition.

The HCM 2000 intersection LOS worksheets for the significantly impacted intersection for the Cumulative with I-880 Improvements Plus Project condition with the recommended improvement is included in Appendix I.

Table M: Cumulative with I-880 Improvements Plus Project with Improvement Level of Service Summary

Intersection	Peak Hour	Without Improvement					With Improvement		
		Cumulative		Cumulative + Project		Change (sec)	Cumulative + Project		Delay Reduction (sec)[1]
		Delay (sec)	LOS	Delay (sec)	LOS		Delay (sec)	LOS	
9. Ruus Road/ Industrial Park West	AM	>80.0	F	>80.0	F	7.0	>80.0	F	>60.0
	PM	>80.0	F	>80.0	F	2.9	>80.0	F	>60.0

= Unsatisfactory LOS

Note: For an intersection operating at LOS F in the (No Project) condition, a significant impact occurs when the project adds more than 5 seconds of delay.

1 Delay Reduction (sec) = Cumulative + Project (With Improvement) Delay – Cumulative (Without Improvement) Delay

LOS = level of service

sec = seconds

CONCLUSIONS

Based on the results of this impact analysis, implementation of the 29212 Mission Boulevard Project with signal timing adjustments would not result in any significant impacts to the surrounding roadway system. Based on the results of the intersection queuing analysis, the proposed project would not significantly increase the 95th percentile queues for Existing, Background, and Cumulative conditions.

Based on the site plan layout, adequate access and on-site circulation would be provided. The proposed project would also provide improved sidewalk infrastructure along the project frontage on Mission Boulevard. Based on the proposed parking supply and City Zoning Code parking requirements, the 29212 Mission Boulevard Project would provide adequate parking. In addition, the project would not impact any existing transit, biking, or pedestrian facilities.

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APPENDIX A

TRAFFIC VOLUME DATA AND SIGNAL TIMING SHEETS

Counts Unlimited
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(951) 268-6268

City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Harder Road
Weather: Clear

File Name : 01_HWD_Mission_Harder AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Mission Boulevard Southbound				Harder Road Westbound				Mission Boulevard Northbound				Harder Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	440	23	466	10	11	3	24	28	186	7	221	36	10	49	95	806
07:15 AM	1	411	26	438	29	23	10	62	35	232	9	276	48	11	49	108	884
07:30 AM	3	338	19	360	50	31	6	87	57	213	9	279	70	18	94	182	908
07:45 AM	6	411	33	450	55	19	5	79	78	276	22	376	69	26	70	165	1070
Total	13	1600	101	1714	144	84	24	252	198	907	47	1152	223	65	262	550	3668
08:00 AM	7	283	35	325	27	36	12	75	65	236	21	322	85	42	92	219	941
08:15 AM	7	389	53	449	14	7	6	27	47	206	24	277	62	21	72	155	908
08:30 AM	9	338	49	396	11	6	2	19	43	239	13	295	64	19	37	120	830
08:45 AM	2	316	45	363	10	12	5	27	35	219	14	268	40	15	41	96	754
Total	25	1326	182	1533	62	61	25	148	190	900	72	1162	251	97	242	590	3433
Grand Total	38	2926	283	3247	206	145	49	400	388	1807	119	2314	474	162	504	1140	7101
Apprch %	1.2	90.1	8.7		51.5	36.2	12.2		16.8	78.1	5.1		41.6	14.2	44.2		
Total %	0.5	41.2	4	45.7	2.9	2	0.7	5.6	5.5	25.4	1.7	32.6	6.7	2.3	7.1	16.1	

	Mission Boulevard Southbound				Harder Road Westbound				Mission Boulevard Northbound				Harder Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	3	338	19	360	50	31	6	**87**	57	213	9	279	70	18	**94**	182	908
07:45 AM	6	**411**	33	**450**	**55**	19	5	79	**78**	**276**	22	**376**	69	26	70	165	**1070**
08:00 AM	**7**	283	35	325	27	**36**	**12**	75	65	236	21	322	**85**	**42**	92	**219**	941
08:15 AM	7	389	**53**	449	14	7	6	27	47	206	**24**	277	62	21	72	155	908
Total Volume	23	1421	140	1584	146	93	29	268	247	931	76	1254	286	107	328	721	3827
% App. Total	1.5	89.7	8.8		54.5	34.7	10.8		19.7	74.2	6.1		39.7	14.8	45.5		
PHF	.821	.864	.660	.880	.664	.646	.604	.770	.792	.843	.792	.834	.841	.637	.872	.823	.894

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Site Code : 00319343
Start Date : 5/23/2019
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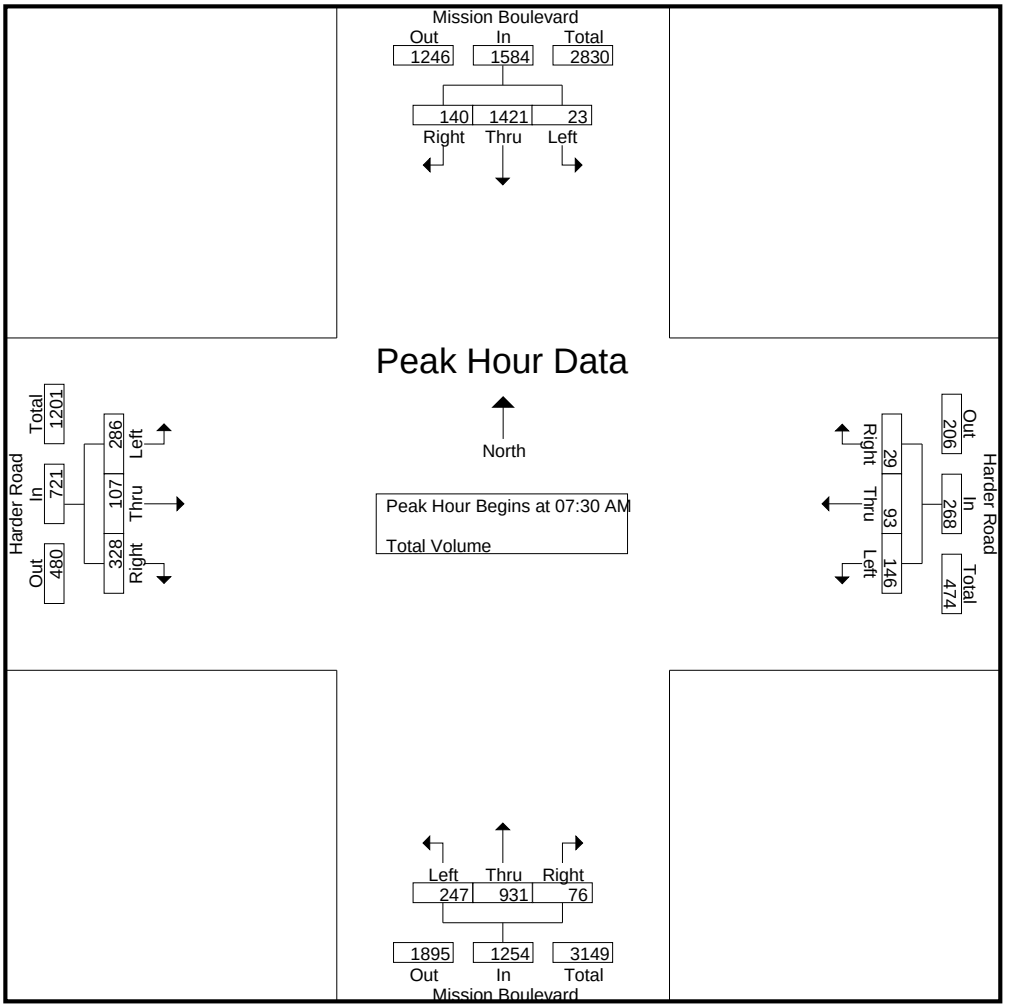

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:45 AM				07:30 AM			
+0 mins.	3	**440**	23	**466**	29	23	10	62	**78**	**276**	22	**376**	70	18	**94**	182
+15 mins.	1	411	26	438	50	31	6	**87**	65	236	21	322	69	26	70	165
+30 mins.	3	338	19	360	**55**	19	5	79	47	206	**24**	277	**85**	**42**	92	**219**
+45 mins.	**6**	411	**33**	450	27	**36**	**12**	75	43	239	13	295	62	21	72	155
Total Volume	13	1600	101	1714	161	109	33	303	233	957	80	1270	286	107	328	721
% App. Total	0.8	93.3	5.9		53.1	36	10.9		18.3	75.4	6.3		39.7	14.8	45.5	
PHF	.542	.909	.765	.920	.732	.757	.688	.871	.747	.867	.833	.844	.841	.637	.872	.823

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Groups Printed- Total Volume

	Mission Boulevard Southbound				Harder Road Westbound				Mission Boulevard Northbound				Harder Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	10	261	49	320	15	33	6	54	54	321	48	423	69	36	63	168	965
04:15 PM	10	223	38	271	20	29	6	55	70	334	35	439	67	42	69	178	943
04:30 PM	20	259	44	323	18	25	8	51	78	377	39	494	64	28	64	156	1024
04:45 PM	13	305	50	368	19	33	9	61	65	338	24	427	65	30	74	169	1025
Total	53	1048	181	1282	72	120	29	221	267	1370	146	1783	265	136	270	671	3957
05:00 PM	17	253	38	308	38	30	10	78	77	411	25	513	61	26	79	166	1065
05:15 PM	8	292	47	347	23	25	11	59	62	353	36	451	69	19	83	171	1028
05:30 PM	8	238	37	283	15	32	3	50	60	353	25	438	63	30	62	155	926
05:45 PM	13	295	54	362	18	13	6	37	75	347	21	443	54	25	66	145	987
Total	46	1078	176	1300	94	100	30	224	274	1464	107	1845	247	100	290	637	4006
Grand Total	99	2126	357	2582	166	220	59	445	541	2834	253	3628	512	236	560	1308	7963
Apprch %	3.8	82.3	13.8		37.3	49.4	13.3		14.9	78.1	7		39.1	18	42.8		
Total %	1.2	26.7	4.5	32.4	2.1	2.8	0.7	5.6	6.8	35.6	3.2	45.6	6.4	3	7	16.4	

	Mission Boulevard Southbound				Harder Road Westbound				Mission Boulevard Northbound				Harder Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**20**	259	44	323	18	25	8	51	**78**	377	**39**	494	64	28	64	156	1024
04:45 PM	13	**305**	**50**	**368**	19	**33**	9	61	65	338	24	427	65	**30**	74	169	1025
05:00 PM	17	253	38	308	**38**	30	10	**78**	77	**411**	25	**513**	61	26	79	166	**1065**
05:15 PM	8	292	47	347	23	25	**11**	59	62	353	36	451	**69**	19	**83**	**171**	1028
Total Volume	58	1109	179	1346	98	113	38	249	282	1479	124	1885	259	103	300	662	4142
% App. Total	4.3	82.4	13.3		39.4	45.4	15.3		15	78.5	6.6		39.1	15.6	45.3		
PHF	.725	.909	.895	.914	.645	.856	.864	.798	.904	.900	.795	.919	.938	.858	.904	.968	.972

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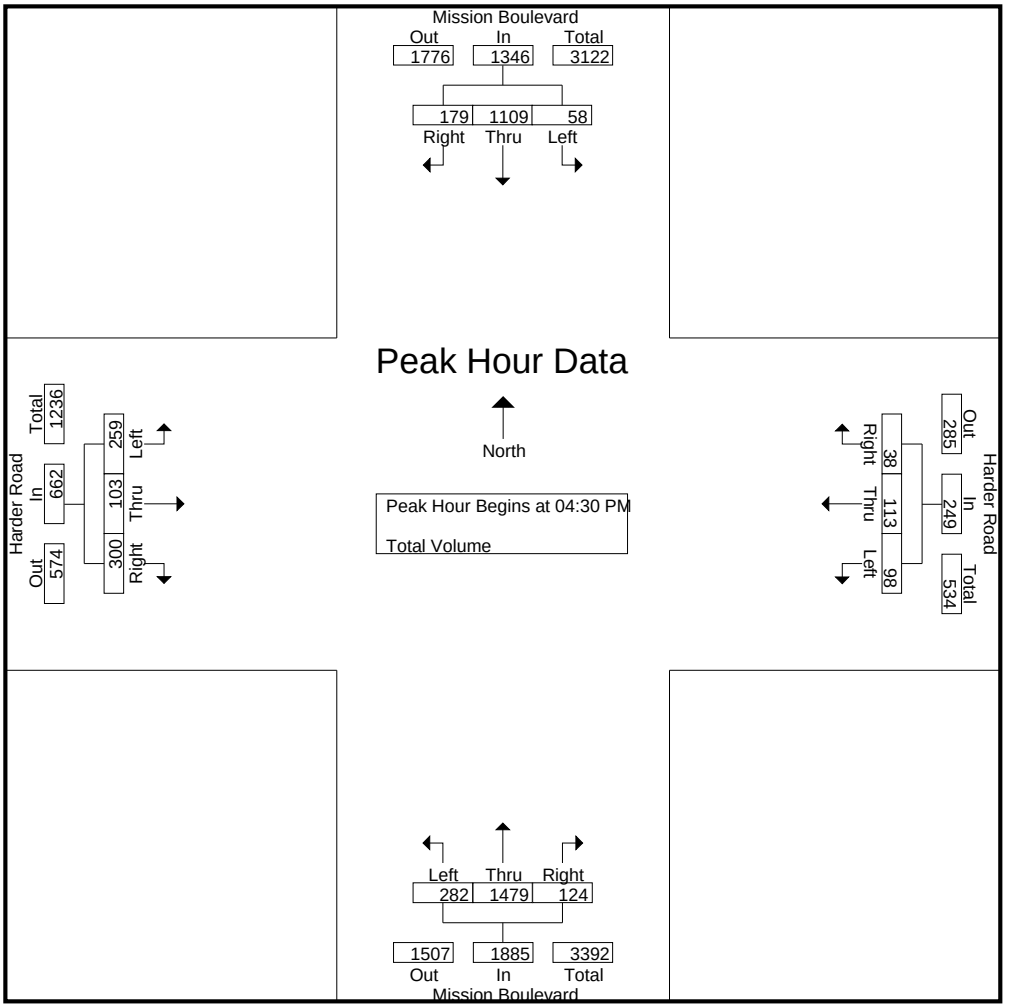

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:00 PM			
+0 mins.	**20**	259	44	323	18	25	8	51	**78**	377	**39**	494	**69**	36	63	168
+15 mins.	13	**305**	**50**	**368**	19	**33**	9	61	65	338	24	427	67	**42**	69	**178**
+30 mins.	17	253	38	308	**38**	30	10	**78**	77	**411**	25	**513**	64	28	64	156
+45 mins.	8	292	47	347	23	25	**11**	59	62	353	36	451	65	30	**74**	169
Total Volume	58	1109	179	1346	98	113	38	249	282	1479	124	1885	265	136	270	671
% App. Total	4.3	82.4	13.3		39.4	45.4	15.3		15	78.5	6.6		39.5	20.3	40.2	
PHF	.725	.909	.895	.914	.645	.856	.864	.798	.904	.900	.795	.919	.960	.810	.912	.942

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E/W: Tennyson Road
Weather: Clear

File Name : 02_HWD_Mission_Tennyson AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Mission Boulevard Southbound				Tennyson Road Westbound				Mission Boulevard Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	423	51	477	0	1	0	1	37	170	0	207	55	1	50	106	791
07:15 AM	1	466	43	510	0	1	0	1	32	208	2	242	62	0	80	142	895
07:30 AM	5	347	51	403	1	0	0	1	45	298	0	343	82	1	57	140	887
07:45 AM	2	327	64	393	1	1	0	2	66	266	1	333	99	1	61	161	889
Total	11	1563	209	1783	2	3	0	5	180	942	3	1125	298	3	248	549	3462
08:00 AM	1	402	69	472	1	0	0	1	69	181	0	250	74	0	72	146	869
08:15 AM	5	386	77	468	2	4	0	6	51	147	0	198	81	1	62	144	816
08:30 AM	6	310	68	384	2	3	0	5	30	171	0	201	67	2	49	118	708
08:45 AM	4	285	63	352	0	3	0	3	31	162	0	193	67	0	30	97	645
Total	16	1383	277	1676	5	10	0	15	181	661	0	842	289	3	213	505	3038
Grand Total	27	2946	486	3459	7	13	0	20	361	1603	3	1967	587	6	461	1054	6500
Apprch %	0.8	85.2	14.1		35	65	0		18.4	81.5	0.2		55.7	0.6	43.7		
Total %	0.4	45.3	7.5	53.2	0.1	0.2	0	0.3	5.6	24.7	0	30.3	9	0.1	7.1	16.2	

	Mission Boulevard Southbound				Tennyson Road Westbound				Mission Boulevard Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	**466**	43	**510**	0	**1**	0	1	32	208	**2**	242	62	0	**80**	142	**895**
07:30 AM	**5**	347	51	403	**1**	0	0	1	45	**298**	0	**343**	82	**1**	57	140	887
07:45 AM	2	327	64	393	1	1	0	**2**	66	266	1	333	**99**	1	61	**161**	889
08:00 AM	1	402	**69**	472	1	0	0	1	**69**	181	0	250	74	0	72	146	869
Total Volume	9	1542	227	1778	3	2	0	5	212	953	3	1168	317	2	270	589	3540
% App. Total	0.5	86.7	12.8		60	40	0		18.2	81.6	0.3		53.8	0.3	45.8		
PHF	.450	.827	.822	.872	.750	.500	.000	.625	.768	.799	.375	.851	.801	.500	.844	.915	.989

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City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Tennyson Road
Weather: Clear

File Name : 02_HWD_Mission_Tennyson AM
Site Code : 00319343
Start Date : 5/23/2019
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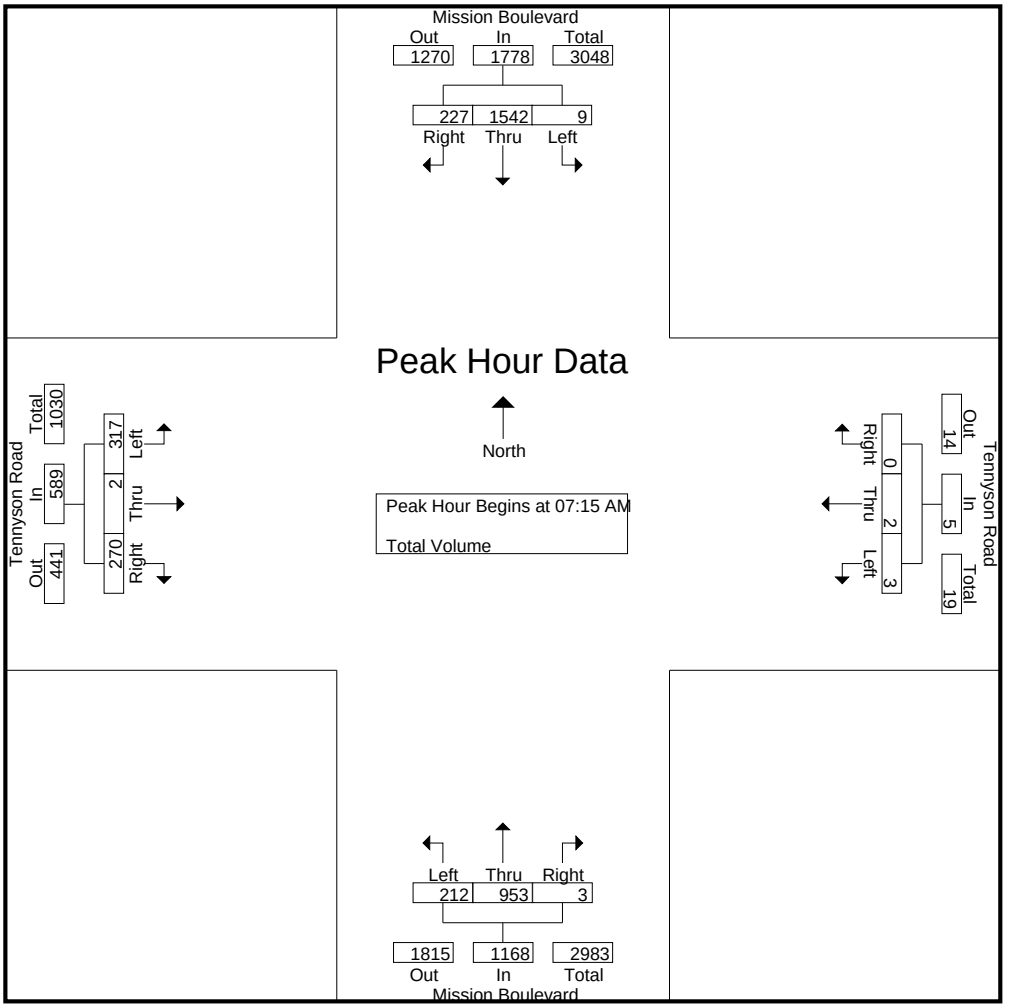

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				07:15 AM				07:30 AM			
+0 mins.	3	423	51	477	1	0	0	1	32	208	**2**	242	82	**1**	57	140
+15 mins.	1	**466**	43	**510**	**2**	**4**	0	**6**	45	**298**	0	**343**	**99**	1	61	**161**
+30 mins.	**5**	347	51	403	2	3	0	5	66	266	1	333	74	0	**72**	146
+45 mins.	2	327	**64**	393	0	3	0	3	**69**	181	0	250	81	1	62	144
Total Volume	11	1563	209	1783	5	10	0	15	212	953	3	1168	336	3	252	591
% App. Total	0.6	87.7	11.7		33.3	66.7	0		18.2	81.6	0.3		56.9	0.5	42.6	
PHF	.550	.839	.816	.874	.625	.625	.000	.625	.768	.799	.375	.851	.848	.750	.875	.918

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Groups Printed- Total Volume

	Mission Boulevard Southbound				Tennyson Road Westbound				Mission Boulevard Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	221	76	301	1	2	1	4	77	312	0	389	88	0	50	138	832
04:15 PM	7	259	72	338	0	3	0	3	66	350	0	416	94	3	51	148	905
04:30 PM	4	207	60	271	1	5	2	8	51	359	1	411	97	5	65	167	857
04:45 PM	7	241	81	329	1	2	4	7	84	364	1	449	88	0	48	136	921
Total	22	928	289	1239	3	12	7	22	278	1385	2	1665	367	8	214	589	3515
05:00 PM	8	274	62	344	4	2	4	10	94	364	0	458	68	1	56	125	937
05:15 PM	8	271	77	356	1	6	3	10	85	355	0	440	59	1	57	117	923
05:30 PM	9	246	76	331	3	2	0	5	62	372	0	434	78	1	53	132	902
05:45 PM	13	228	74	315	2	6	1	9	62	300	0	362	61	3	48	112	798
Total	38	1019	289	1346	10	16	8	34	303	1391	0	1694	266	6	214	486	3560
Grand Total	60	1947	578	2585	13	28	15	56	581	2776	2	3359	633	14	428	1075	7075
Apprch %	2.3	75.3	22.4		23.2	50	26.8		17.3	82.6	0.1		58.9	1.3	39.8		
Total %	0.8	27.5	8.2	36.5	0.2	0.4	0.2	0.8	8.2	39.2	0	47.5	8.9	0.2	6	15.2	

	Mission Boulevard Southbound				Tennyson Road Westbound				Mission Boulevard Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	7	241	**81**	329	1	2	**4**	7	84	364	**1**	449	**88**	0	48	**136**	921
05:00 PM	8	**274**	62	344	**4**	2	4	**10**	**94**	364	0	**458**	68	**1**	56	125	**937**
05:15 PM	8	271	77	**356**	1	**6**	3	10	85	355	0	440	59	1	**57**	117	923
05:30 PM	**9**	246	76	331	3	2	0	5	62	**372**	0	434	78	1	53	132	902
Total Volume	32	1032	296	1360	9	12	11	32	325	1455	1	1781	293	3	214	510	3683
% App. Total	2.4	75.9	21.8		28.1	37.5	34.4		18.2	81.7	0.1		57.5	0.6	42		
PHF	.889	.942	.914	.955	.563	.500	.688	.800	.864	.978	.250	.972	.832	.750	.939	.938	.983

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File Name : 02_HWD_Mission_Tennyson PM
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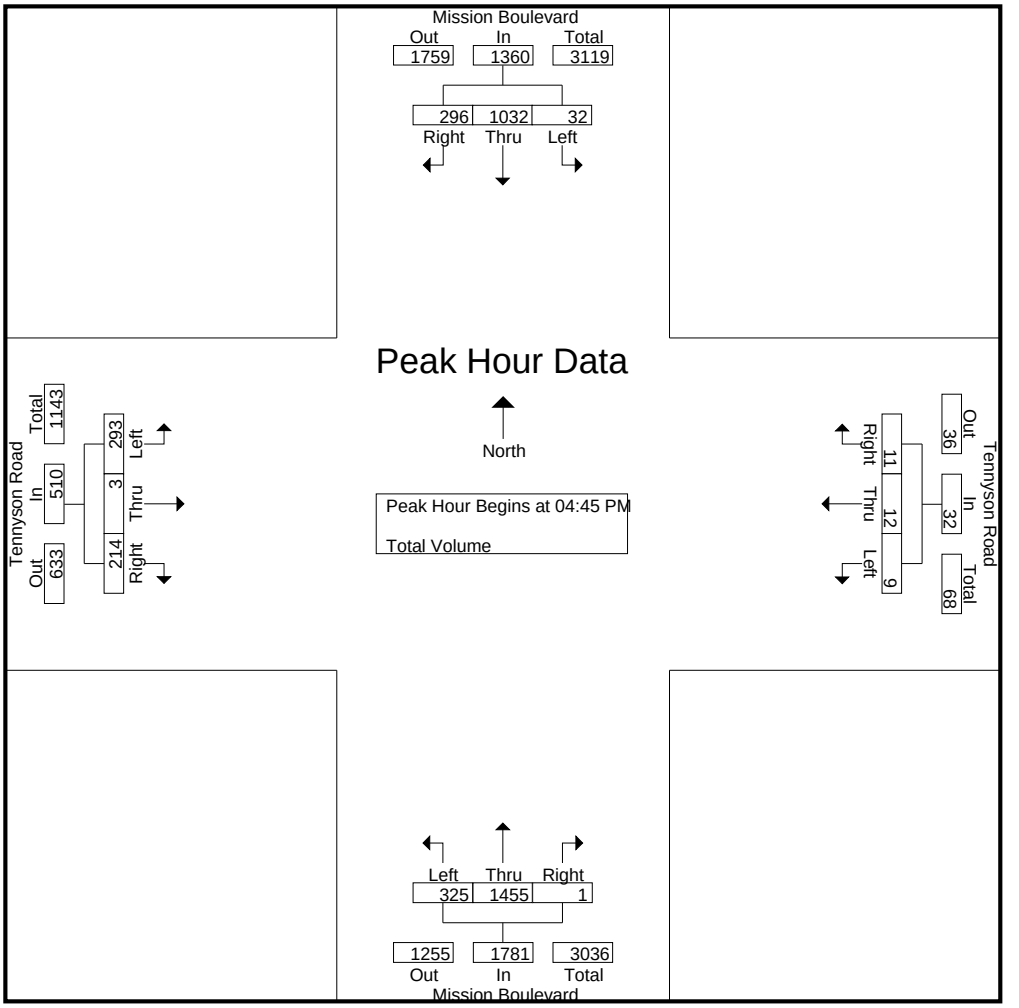

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:45 PM				04:00 PM			
+0 mins.	7	241	**81**	329	1	5	2	8	84	364	**1**	449	88	0	50	138
+15 mins.	8	**274**	62	344	1	2	**4**	7	**94**	364	0	**458**	94	3	51	148
+30 mins.	8	271	77	**356**	**4**	2	4	**10**	85	355	0	440	**97**	**5**	**65**	**167**
+45 mins.	**9**	246	76	331	1	**6**	3	10	62	**372**	0	434	88	0	48	136
Total Volume	32	1032	296	1360	7	15	13	35	325	1455	1	1781	367	8	214	589
% App. Total	2.4	75.9	21.8		20	42.9	37.1		18.2	81.7	0.1		62.3	1.4	36.3	
PHF	.889	.942	.914	.955	.438	.625	.813	.875	.864	.978	.250	.972	.946	.400	.823	.882

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City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Valle Vista Avenue
Weather: Clear

File Name : 03_HWD_Mission_Valle Vista AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Mission Boulevard Southbound			Mission Boulevard Northbound			Valle Vista Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	490	7	497	12	199	211	6	2	8	716
07:15 AM	546	15	561	13	247	260	5	5	10	831
07:30 AM	416	3	419	19	342	361	5	8	13	793
07:45 AM	427	8	435	13	341	354	9	10	19	808
Total	1879	33	1912	57	1129	1186	25	25	50	3148
08:00 AM	468	10	478	14	273	287	0	6	6	771
08:15 AM	473	12	485	16	197	213	1	8	9	707
08:30 AM	379	3	382	7	209	216	1	5	6	604
08:45 AM	317	4	321	4	210	214	4	4	8	543
Total	1637	29	1666	41	889	930	6	23	29	2625
Grand Total	3516	62	3578	98	2018	2116	31	48	79	5773
Apprch %	98.3	1.7		4.6	95.4		39.2	60.8		
Total %	60.9	1.1	62	1.7	35	36.7	0.5	0.8	1.4	

	Mission Boulevard Southbound			Mission Boulevard Northbound			Valle Vista Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	**546**	**15**	**561**	13	247	260	5	5	10	**831**
07:30 AM	416	3	419	**19**	**342**	**361**	5	8	13	793
07:45 AM	427	8	435	13	341	354	**9**	**10**	**19**	808
08:00 AM	468	10	478	14	273	287	0	6	6	771
Total Volume	1857	36	1893	59	1203	1262	19	29	48	3203
% App. Total	98.1	1.9		4.7	95.3		39.6	60.4		
PHF	.850	.600	.844	.776	.879	.874	.528	.725	.632	.964

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City of Hayward
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E/W: Valle Vista Avenue
Weather: Clear

File Name : 03_HWD_Mission_Valle Vista AM
Site Code : 00319343
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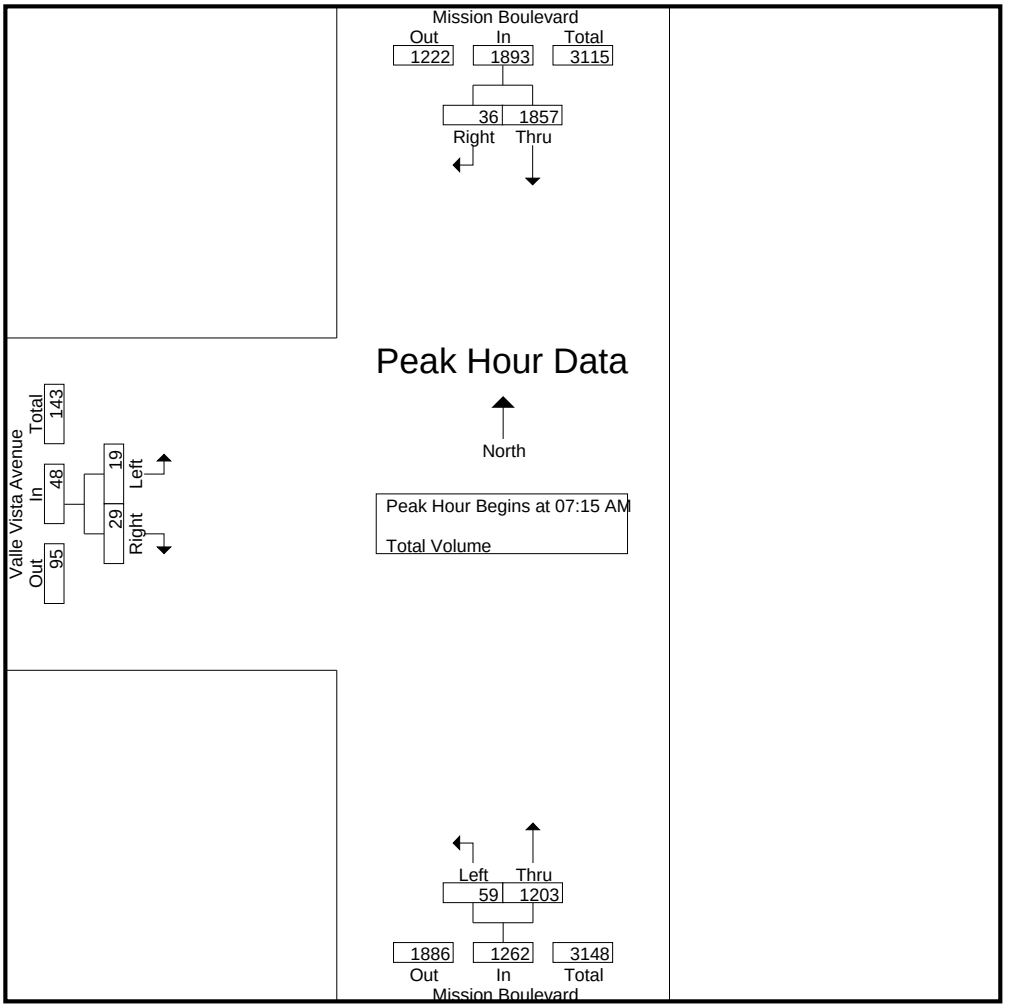

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			07:00 AM		
+0 mins.	490	7	497	13	247	260	6	2	8
+15 mins.	**546**	**15**	**561**	**19**	**342**	**361**	5	5	10
+30 mins.	416	3	419	13	341	354	5	8	13
+45 mins.	427	8	435	14	273	287	**9**	**10**	**19**
Total Volume	1879	33	1912	59	1203	1262	25	25	50
% App. Total	98.3	1.7		4.7	95.3		50	50	
PHF	.860	.550	.852	.776	.879	.874	.694	.625	.658

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City of Hayward
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File Name : 03_HWD_Mission_Valle Vista PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Mission Boulevard Southbound			Mission Boulevard Northbound			Valle Vista Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	262	11	273	9	415	424	2	3	5	702
04:15 PM	311	12	323	12	454	466	3	10	13	802
04:30 PM	262	8	270	9	444	453	4	8	12	735
04:45 PM	288	11	299	13	485	498	2	14	16	813
Total	1123	42	1165	43	1798	1841	11	35	46	3052
05:00 PM	332	5	337	8	463	471	4	7	11	819
05:15 PM	334	15	349	17	452	469	5	12	17	835
05:30 PM	301	8	309	9	446	455	11	19	30	794
05:45 PM	293	9	302	13	394	407	5	17	22	731
Total	1260	37	1297	47	1755	1802	25	55	80	3179
Grand Total	2383	79	2462	90	3553	3643	36	90	126	6231
Apprch %	96.8	3.2		2.5	97.5		28.6	71.4		
Total %	38.2	1.3	39.5	1.4	57	58.5	0.6	1.4	2	

	Mission Boulevard Southbound			Mission Boulevard Northbound			Valle Vista Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	288	11	299	13	**485**	**498**	2	14	16	813
05:00 PM	332	5	337	8	463	471	4	7	11	819
05:15 PM	**334**	**15**	**349**	**17**	452	469	5	12	17	**835**
05:30 PM	301	8	309	9	446	455	**11**	**19**	**30**	794
Total Volume	1255	39	1294	47	1846	1893	22	52	74	3261
% App. Total	97	3		2.5	97.5		29.7	70.3		
PHF	.939	.650	.927	.691	.952	.950	.500	.684	.617	.976

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City of Hayward
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E/W: Valle Vista Avenue
Weather: Clear

File Name : 03_HWD_Mission_Valle Vista PM
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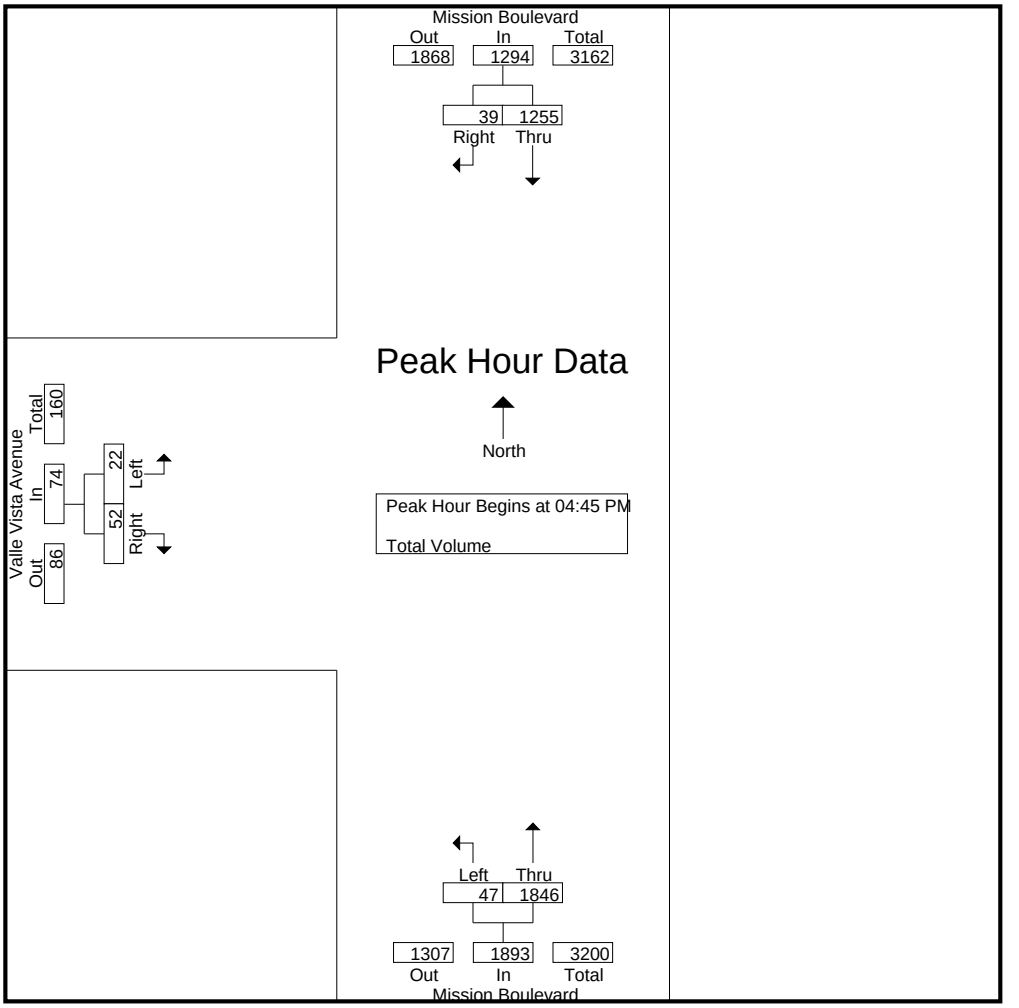

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			04:45 PM			05:00 PM		
+0 mins.	332	5	337	13	**485**	**498**	4	7	11
+15 mins.	**334**	**15**	**349**	8	463	471	5	12	17
+30 mins.	301	8	309	**17**	452	469	**11**	**19**	**30**
+45 mins.	293	9	302	9	446	455	5	17	22
Total Volume	1260	37	1297	47	1846	1893	25	55	80
% App. Total	97.1	2.9		2.5	97.5		31.2	68.8	
PHF	.943	.617	.929	.691	.952	.950	.568	.724	.667

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City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Industrial Pkwy West/Alquire Pkwy
Weather: Clear

File Name : 04_HWD_Mission_Industrial W_Alquire AM
Site Code : 00319343
Start Date : 5/23/2019
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Groups Printed- Total Volume

	Mission Boulevard Southbound				Alquire Parkway Westbound				Mission Boulevard Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	16	308	145	469	4	45	40	89	66	119	2	187	43	12	44	99	844
07:15 AM	19	359	149	527	6	39	49	94	84	165	1	250	48	18	45	111	982
07:30 AM	20	268	135	423	5	57	61	123	70	202	1	273	99	27	41	167	986
07:45 AM	30	264	141	435	4	56	85	145	76	192	3	271	68	36	78	182	1033
Total	85	1199	570	1854	19	197	235	451	296	678	7	981	258	93	208	559	3845
08:00 AM	35	293	149	477	3	49	74	126	68	187	2	257	30	46	69	145	1005
08:15 AM	23	297	156	476	5	51	49	105	64	132	2	198	35	23	62	120	899
08:30 AM	21	209	137	367	2	34	39	75	63	109	2	174	54	25	58	137	753
08:45 AM	16	177	129	322	1	38	18	57	59	161	2	222	41	9	47	97	698
Total	95	976	571	1642	11	172	180	363	254	589	8	851	160	103	236	499	3355
Grand Total	180	2175	1141	3496	30	369	415	814	550	1267	15	1832	418	196	444	1058	7200
Apprch %	5.1	62.2	32.6		3.7	45.3	51		30	69.2	0.8		39.5	18.5	42		
Total %	2.5	30.2	15.8	48.6	0.4	5.1	5.8	11.3	7.6	17.6	0.2	25.4	5.8	2.7	6.2	14.7	

	Mission Boulevard Southbound				Alquire Parkway Westbound				Mission Boulevard Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	19	**359**	**149**	**527**	**6**	39	49	94	**84**	165	1	250	48	18	45	111	982
07:30 AM	20	268	135	423	5	**57**	61	123	70	**202**	1	**273**	**99**	27	41	167	986
07:45 AM	30	264	141	435	4	56	**85**	**145**	76	192	**3**	271	68	36	**78**	**182**	**1033**
08:00 AM	**35**	293	149	477	3	49	74	126	68	187	2	257	30	**46**	69	145	1005
Total Volume	104	1184	574	1862	18	201	269	488	298	746	7	1051	245	127	233	605	4006
% App. Total	5.6	63.6	30.8		3.7	41.2	55.1		28.4	71	0.7		40.5	21	38.5		
PHF	.743	.825	.963	.883	.750	.882	.791	.841	.887	.923	.583	.962	.619	.690	.747	.831	.970

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Weather: Clear

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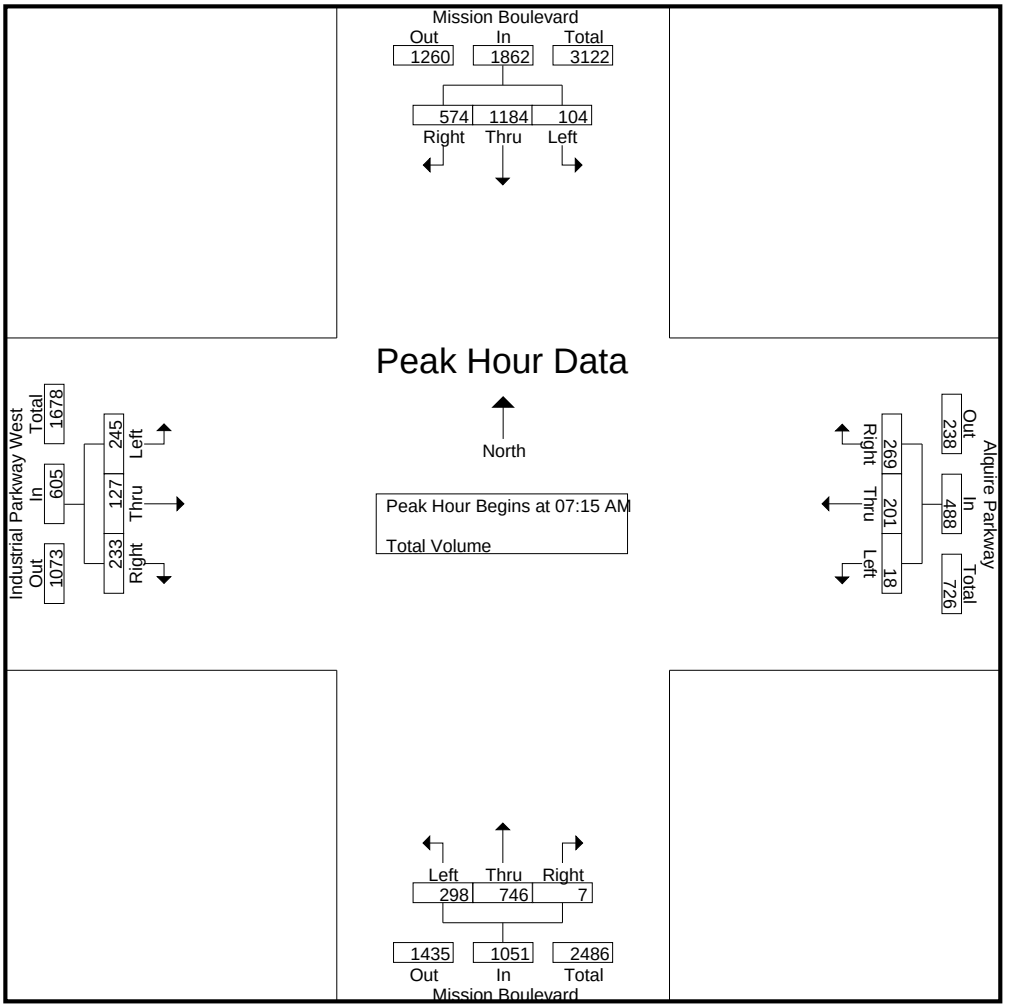

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:15 AM				07:30 AM			
+0 mins.	19	**359**	**149**	**527**	**5**	**57**	61	123	**84**	165	1	250	**99**	27	41	167
+15 mins.	20	268	135	423	4	56	**85**	**145**	70	**202**	1	**273**	68	36	**78**	**182**
+30 mins.	30	264	141	435	3	49	74	126	76	192	**3**	271	30	**46**	69	145
+45 mins.	**35**	293	149	477	5	51	49	105	68	187	2	257	35	23	62	120
Total Volume	104	1184	574	1862	17	213	269	499	298	746	7	1051	232	132	250	614
% App. Total	5.6	63.6	30.8		3.4	42.7	53.9		28.4	71	0.7		37.8	21.5	40.7	
PHF	.743	.825	.963	.883	.850	.934	.791	.860	.887	.923	.583	.962	.586	.717	.801	.843

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City of Hayward
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Weather: Clear

File Name : 04_HWD_Mission_Industrial W_Alquire PM
Site Code : 00319343
Start Date : 5/23/2019
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Groups Printed- Total Volume

	Mission Boulevard Southbound				Alquire Parkway Westbound				Mission Boulevard Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	30	189	66	285	1	16	33	50	66	264	5	335	134	35	102	271	941
04:15 PM	32	212	71	315	2	14	20	36	70	282	3	355	138	36	121	295	1001
04:30 PM	49	197	54	300	2	23	31	56	64	293	1	358	114	47	94	255	969
04:45 PM	33	202	58	293	3	22	23	48	69	321	0	390	132	43	110	285	1016
Total	144	800	249	1193	8	75	107	190	269	1160	9	1438	518	161	427	1106	3927
05:00 PM	40	215	71	326	2	23	34	59	67	312	4	383	123	45	112	280	1048
05:15 PM	39	275	69	383	3	27	34	64	72	315	9	396	125	48	106	279	1122
05:30 PM	33	210	50	293	3	45	47	95	62	288	4	354	115	46	109	270	1012
05:45 PM	30	218	54	302	0	26	30	56	48	258	3	309	119	49	125	293	960
Total	142	918	244	1304	8	121	145	274	249	1173	20	1442	482	188	452	1122	4142
Grand Total	286	1718	493	2497	16	196	252	464	518	2333	29	2880	1000	349	879	2228	8069
Apprch %	11.5	68.8	19.7		3.4	42.2	54.3		18	81	1		44.9	15.7	39.5		
Total %	3.5	21.3	6.1	30.9	0.2	2.4	3.1	5.8	6.4	28.9	0.4	35.7	12.4	4.3	10.9	27.6	

	Mission Boulevard Southbound				Alquire Parkway Westbound				Mission Boulevard Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	33	202	58	293	**3**	22	23	48	69	**321**	0	390	**132**	43	110	**285**	1016
05:00 PM	**40**	215	**71**	326	2	23	34	59	67	312	4	383	123	45	**112**	280	1048
05:15 PM	39	**275**	69	**383**	3	27	34	64	**72**	315	**9**	**396**	125	**48**	106	279	**1122**
05:30 PM	33	210	50	293	3	**45**	**47**	**95**	62	288	4	354	115	46	109	270	1012
Total Volume	145	902	248	1295	11	117	138	266	270	1236	17	1523	495	182	437	1114	4198
% App. Total	11.2	69.7	19.2		4.1	44	51.9		17.7	81.2	1.1		44.4	16.3	39.2		
PHF	.906	.820	.873	.845	.917	.650	.734	.700	.938	.963	.472	.961	.938	.948	.975	.977	.935

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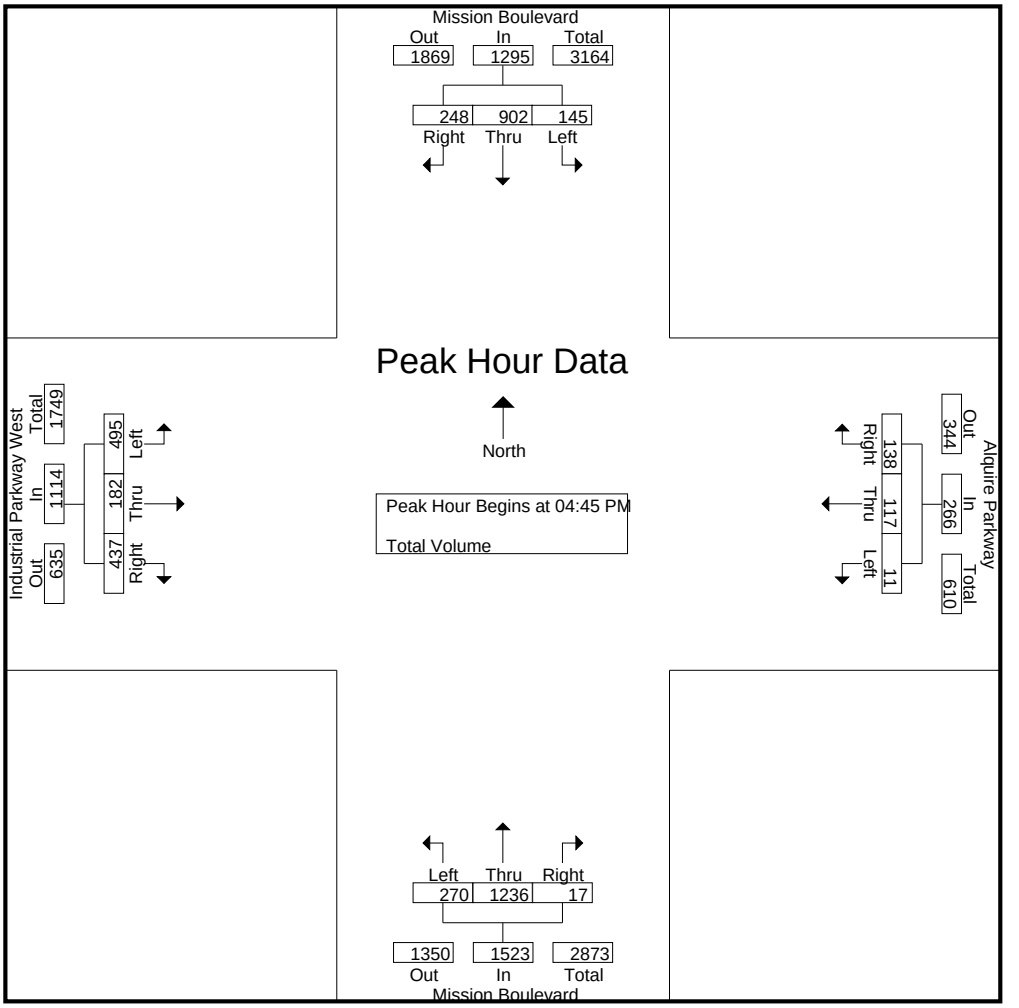
City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Industrial Pkwy West/Alquire Pkwy
Weather: Clear

File Name : 04_HWD_Mission_Industrial W_Alquire PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:30 PM				05:00 PM			
+0 mins.	**40**	215	**71**	326	2	23	34	59	64	293	1	358	123	45	112	280
+15 mins.	39	**275**	69	**383**	**3**	27	34	64	69	**321**	0	390	**125**	48	106	279
+30 mins.	33	210	50	293	3	**45**	**47**	**95**	67	312	4	383	115	46	109	270
+45 mins.	30	218	54	302	0	26	30	56	**72**	315	**9**	**396**	119	**49**	**125**	**293**
Total Volume	142	918	244	1304	8	121	145	274	272	1241	14	1527	482	188	452	1122
% App. Total	10.9	70.4	18.7		2.9	44.2	52.9		17.8	81.3	0.9		43	16.8	40.3	
PHF	.888	.835	.859	.851	.667	.672	.771	.721	.944	.967	.389	.964	.964	.959	.904	.957

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City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Whipple Road/May Road
Weather: Clear

File Name : 05_HWD_Mission_Whipple_May AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Mission Boulevard Southbound				May Road Westbound				Mission Boulevard Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	405	19	426	4	2	6	12	45	87	0	132	19	2	56	77	647
07:15 AM	1	442	27	470	9	3	1	13	64	125	2	191	28	1	61	90	764
07:30 AM	1	437	29	467	7	6	2	15	69	131	4	204	35	1	54	90	776
07:45 AM	4	349	31	384	9	2	5	16	75	149	4	228	40	2	55	97	725
Total	8	1633	106	1747	29	13	14	56	253	492	10	755	122	6	226	354	2912
08:00 AM	0	364	21	385	7	3	4	14	67	126	0	193	23	3	46	72	664
08:15 AM	4	375	27	406	5	3	1	9	72	176	0	248	38	2	69	109	772
08:30 AM	2	331	28	361	7	3	4	14	71	114	0	185	16	4	52	72	632
08:45 AM	2	232	18	252	3	4	0	7	71	136	1	208	30	0	49	79	546
Total	8	1302	94	1404	22	13	9	44	281	552	1	834	107	9	216	332	2614
Grand Total	16	2935	200	3151	51	26	23	100	534	1044	11	1589	229	15	442	686	5526
Apprch %	0.5	93.1	6.3		51	26	23		33.6	65.7	0.7		33.4	2.2	64.4		
Total %	0.3	53.1	3.6	57	0.9	0.5	0.4	1.8	9.7	18.9	0.2	28.8	4.1	0.3	8	12.4	

	Mission Boulevard Southbound				May Road Westbound				Mission Boulevard Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	1	**437**	29	**467**	7	**6**	2	15	69	131	**4**	204	35	1	54	90	**776**
07:45 AM	**4**	349	**31**	384	**9**	2	**5**	**16**	**75**	149	4	228	**40**	2	55	97	725
08:00 AM	0	364	21	385	7	3	4	14	67	126	0	193	23	**3**	46	72	664
08:15 AM	4	375	27	406	5	3	1	9	72	**176**	0	**248**	38	2	**69**	**109**	772
Total Volume	9	1525	108	1642	28	14	12	54	283	582	8	873	136	8	224	368	2937
% App. Total	0.5	92.9	6.6		51.9	25.9	22.2		32.4	66.7	0.9		37	2.2	60.9		
PHF	.563	.872	.871	.879	.778	.583	.600	.844	.943	.827	.500	.880	.850	.667	.812	.844	.946

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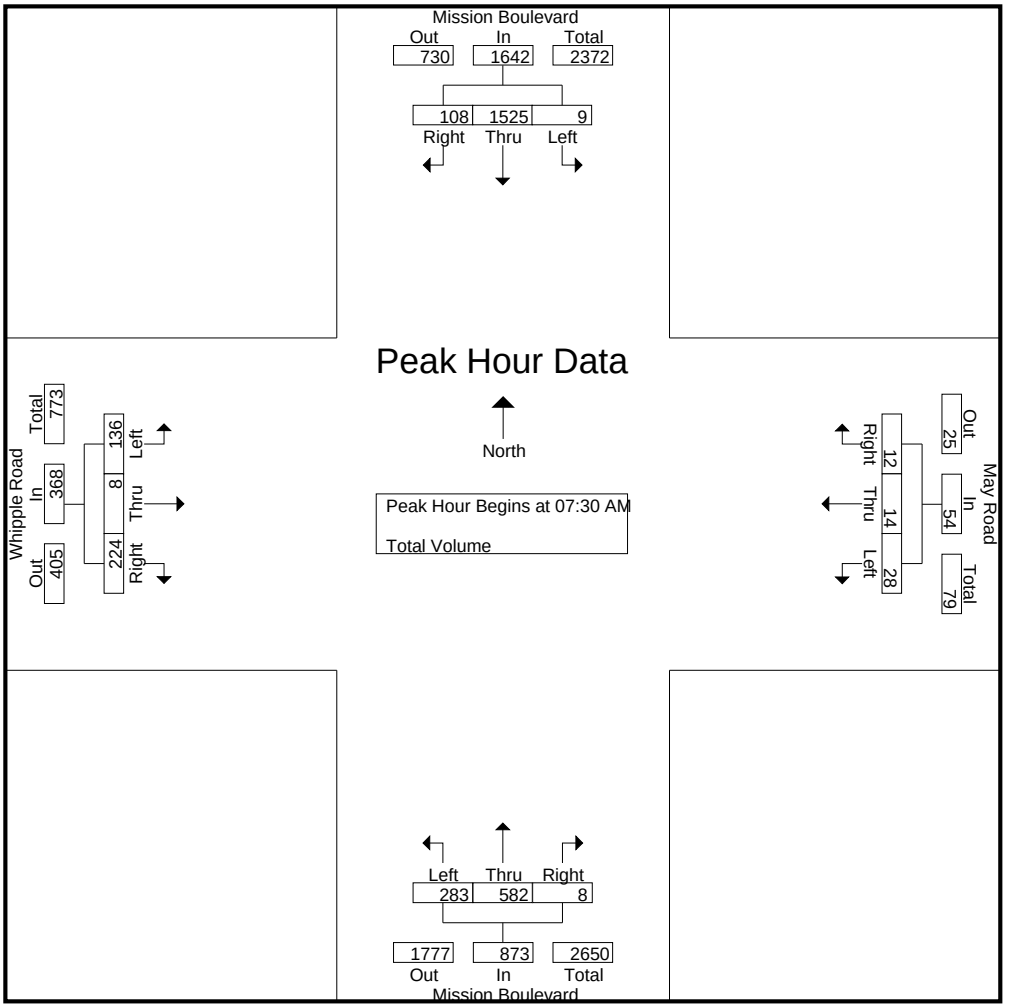
City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Whipple Road/May Road
Weather: Clear

File Name : 05_HWD_Mission_Whipple_May AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:30 AM				07:30 AM			
+0 mins.	2	405	19	426	**9**	3	1	13	69	131	**4**	204	35	1	54	90
+15 mins.	1	**442**	27	**470**	7	**6**	2	15	**75**	149	4	228	**40**	2	55	97
+30 mins.	1	437	29	467	9	2	**5**	**16**	67	126	0	193	23	**3**	46	72
+45 mins.	**4**	349	**31**	384	7	3	4	14	72	**176**	0	**248**	38	2	**69**	**109**
Total Volume	8	1633	106	1747	32	14	12	58	283	582	8	873	136	8	224	368
% App. Total	0.5	93.5	6.1		55.2	24.1	20.7		32.4	66.7	0.9		37	2.2	60.9	
PHF	.500	.924	.855	.929	.889	.583	.600	.906	.943	.827	.500	.880	.850	.667	.812	.844

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City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Whipple Road/May Road
Weather: Clear

File Name : 05_HWD_Mission_Whipple_May PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Mission Boulevard Southbound				May Road Westbound				Mission Boulevard Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	198	37	239	3	1	2	6	53	361	5	419	44	2	60	106	770
04:15 PM	6	169	22	197	5	2	0	7	41	337	8	386	45	3	48	96	686
04:30 PM	8	178	29	215	2	3	3	8	57	354	6	417	58	3	67	128	768
04:45 PM	3	184	34	221	7	2	2	11	71	384	2	457	58	2	73	133	822
Total	21	729	122	872	17	8	7	32	222	1436	21	1679	205	10	248	463	3046
05:00 PM	4	186	27	217	5	0	4	9	69	359	5	433	49	8	63	120	779
05:15 PM	2	212	35	249	5	3	1	9	69	363	8	440	49	3	68	120	818
05:30 PM	5	220	35	260	4	4	0	8	58	301	5	364	44	4	73	121	753
05:45 PM	5	172	38	215	2	2	5	9	57	338	3	398	41	1	62	104	726
Total	16	790	135	941	16	9	10	35	253	1361	21	1635	183	16	266	465	3076
Grand Total	37	1519	257	1813	33	17	17	67	475	2797	42	3314	388	26	514	928	6122
Apprch %	2	83.8	14.2		49.3	25.4	25.4		14.3	84.4	1.3		41.8	2.8	55.4		
Total %	0.6	24.8	4.2	29.6	0.5	0.3	0.3	1.1	7.8	45.7	0.7	54.1	6.3	0.4	8.4	15.2	

	Mission Boulevard Southbound				May Road Westbound				Mission Boulevard Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**8**	178	29	215	2	**3**	3	8	57	354	6	417	**58**	3	67	128	768
04:45 PM	3	184	34	221	**7**	2	2	**11**	**71**	**384**	2	**457**	58	2	**73**	**133**	**822**
05:00 PM	4	186	27	217	5	0	**4**	9	69	359	5	433	49	**8**	63	120	779
05:15 PM	2	**212**	**35**	**249**	5	3	1	9	69	363	**8**	440	49	3	68	120	818
Total Volume	17	760	125	902	19	8	10	37	266	1460	21	1747	214	16	271	501	3187
% App. Total	1.9	84.3	13.9		51.4	21.6	27		15.2	83.6	1.2		42.7	3.2	54.1		
PHF	.531	.896	.893	.906	.679	.667	.625	.841	.937	.951	.656	.956	.922	.500	.928	.942	.969

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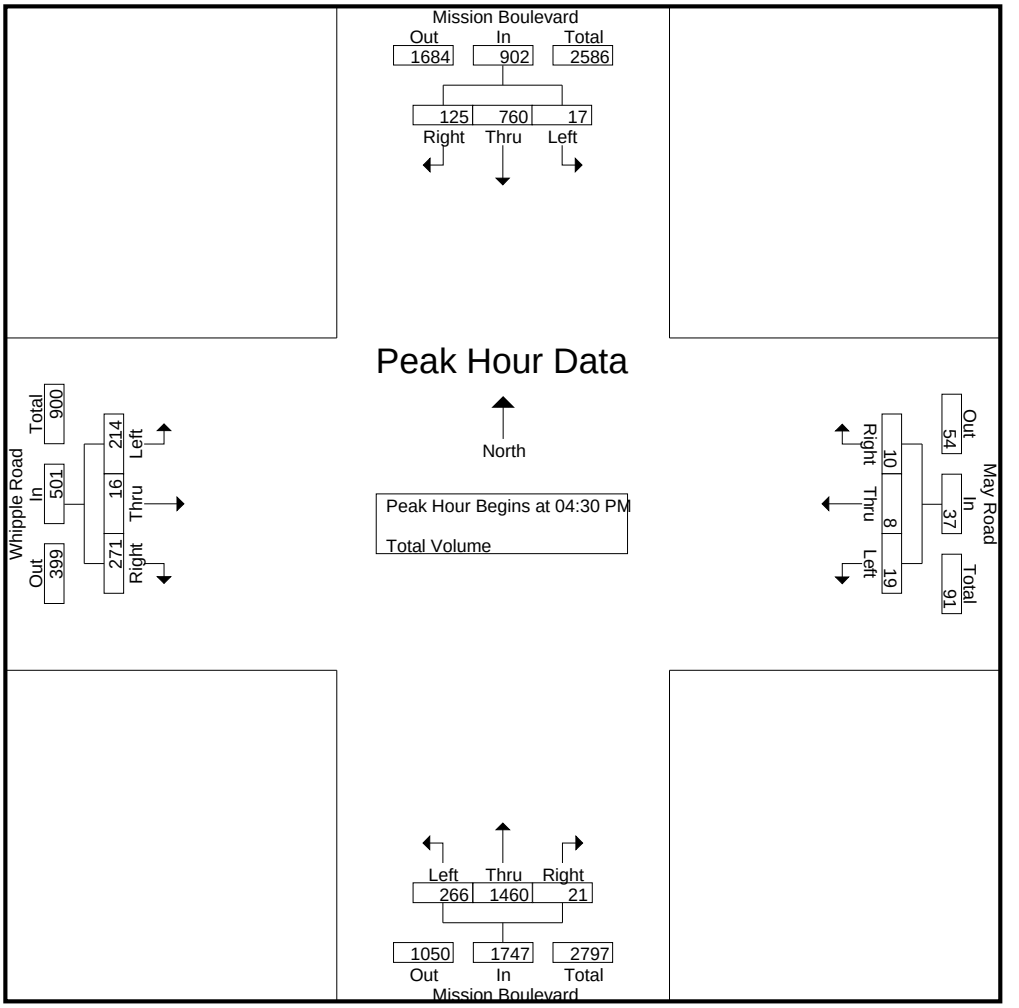
City of Hayward
N/S: Mission Boulevard (SR-238)
E/W: Whipple Road/May Road
Weather: Clear

File Name : 05_HWD_Mission_Whipple_May PM
Site Code : 00319343
Start Date : 5/23/2019



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	3	184	34	221	2	**3**	3	8	57	354	6	417	**58**	3	67	128
+15 mins.	4	186	27	217	**7**	2	2	**11**	**71**	**384**	2	**457**	58	2	**73**	**133**
+30 mins.	2	212	**35**	249	5	0	**4**	9	69	359	5	433	49	**8**	63	120
+45 mins.	**5**	**220**	35	**260**	5	3	1	9	69	363	**8**	440	49	3	68	120
Total Volume	14	802	131	947	19	8	10	37	266	1460	21	1747	214	16	271	501
% App. Total	1.5	84.7	13.8		51.4	21.6	27		15.2	83.6	1.2		42.7	3.2	54.1	
PHF	.700	.911	.936	.911	.679	.667	.625	.841	.937	.951	.656	.956	.922	.500	.928	.942

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City of Hayward
N/S: Dixon Street
E/W: Valle Vista Avenue
Weather: Clear

File Name : 06_HWD_Dixon_Valle Vista AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Dixon Street Southbound				Valle Vista Avenue Westbound				Dixon Street Northbound				Valle Vista Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	43	0	47	10	0	7	17	2	64	6	72	2	0	0	2	138
07:15 AM	5	53	1	59	12	1	16	29	0	73	6	79	2	1	1	4	171
07:30 AM	11	57	0	68	10	0	21	31	1	81	8	90	1	0	1	2	191
07:45 AM	7	85	7	99	12	0	16	28	1	81	8	90	5	2	3	10	227
Total	27	238	8	273	44	1	60	105	4	299	28	331	10	3	5	18	727
08:00 AM	3	80	1	84	11	0	16	27	1	97	2	100	5	0	3	8	219
08:15 AM	9	68	2	79	16	0	14	30	1	76	3	80	1	0	2	3	192
08:30 AM	6	80	4	90	3	0	8	11	1	41	3	45	3	0	2	5	151
08:45 AM	4	41	0	45	1	0	7	8	0	38	4	42	0	0	0	0	95
Total	22	269	7	298	31	0	45	76	3	252	12	267	9	0	7	16	657
Grand Total	49	507	15	571	75	1	105	181	7	551	40	598	19	3	12	34	1384
Apprch %	8.6	88.8	2.6		41.4	0.6	58		1.2	92.1	6.7		55.9	8.8	35.3		
Total %	3.5	36.6	1.1	41.3	5.4	0.1	7.6	13.1	0.5	39.8	2.9	43.2	1.4	0.2	0.9	2.5	

	Dixon Street Southbound				Valle Vista Avenue Westbound				Dixon Street Northbound				Valle Vista Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**11**	57	0	68	10	0	**21**	**31**	**1**	81	**8**	90	1	0	1	2	191
07:45 AM	7	**85**	**7**	**99**	12	0	16	28	1	81	8	90	**5**	**2**	**3**	**10**	**227**
08:00 AM	3	80	1	84	11	0	16	27	1	**97**	2	**100**	5	0	3	8	219
08:15 AM	9	68	2	79	**16**	0	14	30	1	76	3	80	1	0	2	3	192
Total Volume	30	290	10	330	49	0	67	116	4	335	21	360	12	2	9	23	829
% App. Total	9.1	87.9	3		42.2	0	57.8		1.1	93.1	5.8		52.2	8.7	39.1		
PHF	.682	.853	.357	.833	.766	.000	.798	.935	1.00	.863	.656	.900	.600	.250	.750	.575	.913

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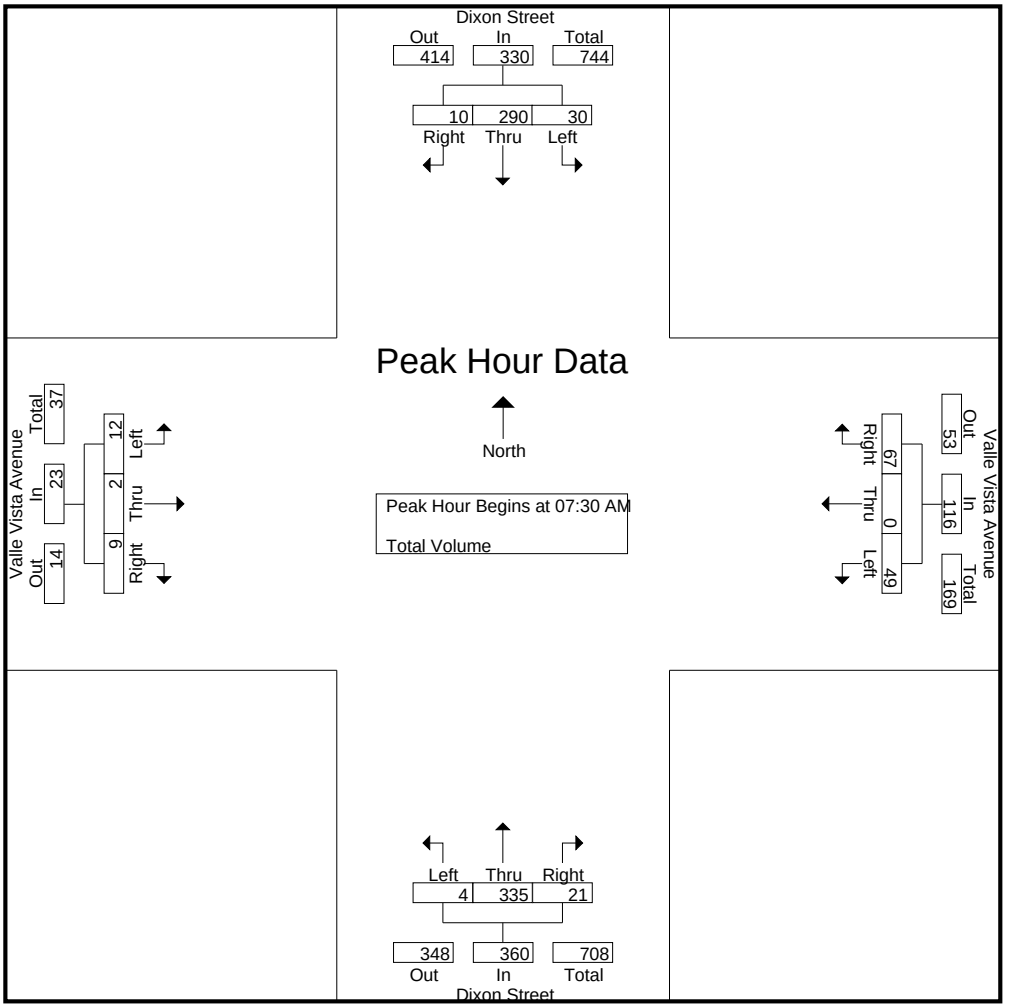
City of Hayward
N/S: Dixon Street
E/W: Valle Vista Avenue
Weather: Clear

File Name : 06_HWD_Dixon_Valle Vista AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:30 AM				07:45 AM			
+0 mins.	7	**85**	**7**	**99**	10	0	**21**	**31**	**1**	81	**8**	90	**5**	**2**	**3**	**10**
+15 mins.	3	80	1	84	12	0	16	28	1	81	8	90	5	0	3	8
+30 mins.	**9**	68	2	79	11	0	16	27	1	**97**	2	**100**	1	0	2	3
+45 mins.	6	80	4	90	**16**	0	14	30	1	76	3	80	3	0	2	5
Total Volume	25	313	14	352	49	0	67	116	4	335	21	360	14	2	10	26
% App. Total	7.1	88.9	4		42.2	0	57.8		1.1	93.1	5.8		53.8	7.7	38.5	
PHF	.694	.921	.500	.889	.766	.000	.798	.935	1.000	.863	.656	.900	.700	.250	.833	.650

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City of Hayward
N/S: Dixon Street
E/W: Valle Vista Avenue
Weather: Clear

File Name : 06_HWD_Dixon_Valle Vista PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Dixon Street Southbound				Valle Vista Avenue Westbound				Dixon Street Northbound				Valle Vista Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	54	6	66	7	2	5	14	5	68	2	75	1	0	1	2	157
04:15 PM	8	45	1	54	6	1	9	16	1	56	3	60	3	1	3	7	137
04:30 PM	8	77	0	85	6	1	7	14	4	48	8	60	1	0	1	2	161
04:45 PM	11	54	4	69	3	0	9	12	3	66	6	75	0	0	1	1	157
Total	33	230	11	274	22	4	30	56	13	238	19	270	5	1	6	12	612
05:00 PM	12	92	2	106	6	1	10	17	8	71	4	83	3	1	1	5	211
05:15 PM	14	71	4	89	14	1	9	24	6	51	12	69	2	5	3	10	192
05:30 PM	17	113	1	131	5	2	8	15	4	55	9	68	1	2	5	8	222
05:45 PM	17	92	3	112	11	0	6	17	1	52	9	62	3	0	1	4	195
Total	60	368	10	438	36	4	33	73	19	229	34	282	9	8	10	27	820
Grand Total	93	598	21	712	58	8	63	129	32	467	53	552	14	9	16	39	1432
Apprch %	13.1	84	2.9		45	6.2	48.8		5.8	84.6	9.6		35.9	23.1	41		
Total %	6.5	41.8	1.5	49.7	4.1	0.6	4.4	9	2.2	32.6	3.7	38.5	1	0.6	1.1	2.7	

	Dixon Street Southbound				Valle Vista Avenue Westbound				Dixon Street Northbound				Valle Vista Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	12	92	2	106	6	1	**10**	17	**8**	**71**	4	**83**	**3**	1	1	5	211
05:15 PM	14	71	**4**	89	**14**	1	9	**24**	6	51	**12**	69	2	**5**	3	**10**	192
05:30 PM	**17**	**113**	1	**131**	5	**2**	8	15	4	55	9	68	1	2	**5**	8	**222**
05:45 PM	17	92	3	112	11	0	6	17	1	52	9	62	3	0	1	4	195
Total Volume	60	368	10	438	36	4	33	73	19	229	34	282	9	8	10	27	820
% App. Total	13.7	84	2.3		49.3	5.5	45.2		6.7	81.2	12.1		33.3	29.6	37		
PHF	.882	.814	.625	.836	.643	.500	.825	.760	.594	.806	.708	.849	.750	.400	.500	.675	.923

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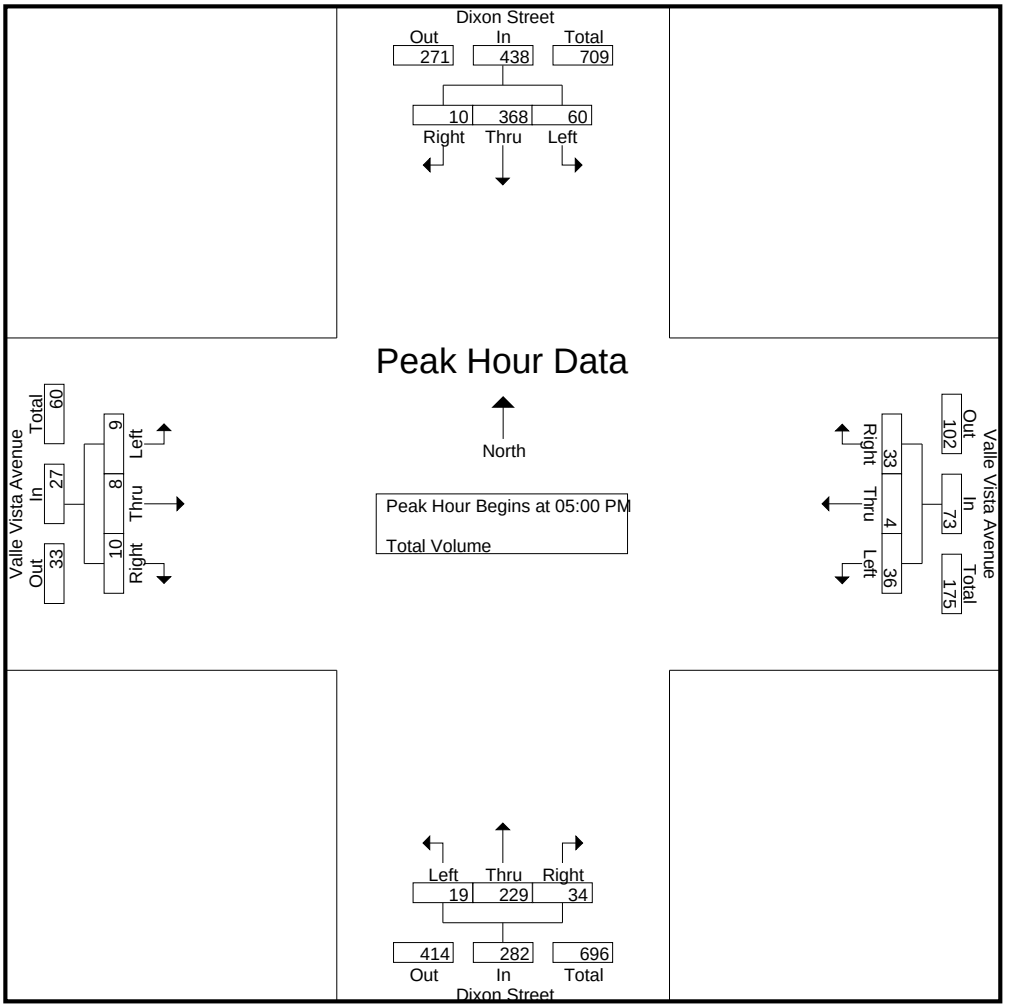
(951) 268-6268

City of Hayward
N/S: Dixon Street
E/W: Valle Vista Avenue
Weather: Clear

File Name : 06_HWD_Dixon_Valle Vista PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:45 PM				05:00 PM			
+0 mins.	12	92	2	106	6	1	**10**	17	3	66	6	75	**3**	1	1	5
+15 mins.	14	71	**4**	89	**14**	1	9	**24**	**8**	**71**	4	**83**	2	**5**	3	**10**
+30 mins.	**17**	**113**	1	**131**	5	**2**	8	15	6	51	**12**	69	1	2	**5**	8
+45 mins.	17	92	3	112	11	0	6	17	4	55	9	68	3	0	1	4
Total Volume	60	368	10	438	36	4	33	73	21	243	31	295	9	8	10	27
% App. Total	13.7	84	2.3		49.3	5.5	45.2		7.1	82.4	10.5		33.3	29.6	37	
PHF	.882	.814	.625	.836	.643	.500	.825	.760	.656	.856	.646	.889	.750	.400	.500	.675

Counts Unlimited
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City of Hayward
N/S: Huntwood Avenue
E/W: Tennyson Road
Weather: Clear

File Name : 07_HWD_Huntwood_Tennyson AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Huntwood Avenue Southbound				Tennyson Road Westbound				Huntwood Avenue Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	20	45	14	79	62	154	2	218	12	15	12	39	6	127	21	154	490
07:15 AM	29	53	15	97	36	178	3	217	35	23	10	68	12	139	33	184	566
07:30 AM	28	67	12	107	57	201	3	261	20	26	27	73	9	174	24	207	648
07:45 AM	51	57	9	117	56	169	8	233	19	27	38	84	10	211	25	246	680
Total	128	222	50	400	211	702	16	929	86	91	87	264	37	651	103	791	2384
08:00 AM	54	59	15	128	40	195	24	259	32	26	27	85	5	192	29	226	698
08:15 AM	36	47	12	95	55	209	12	276	20	18	20	58	19	221	31	271	700
08:30 AM	20	44	14	78	53	198	8	259	23	30	14	67	10	130	30	170	574
08:45 AM	19	25	11	55	38	157	3	198	25	14	7	46	6	126	21	153	452
Total	129	175	52	356	186	759	47	992	100	88	68	256	40	669	111	820	2424
Grand Total	257	397	102	756	397	1461	63	1921	186	179	155	520	77	1320	214	1611	4808
Apprch %	34	52.5	13.5		20.7	76.1	3.3		35.8	34.4	29.8		4.8	81.9	13.3		
Total %	5.3	8.3	2.1	15.7	8.3	30.4	1.3	40	3.9	3.7	3.2	10.8	1.6	27.5	4.5	33.5	

	Huntwood Avenue Southbound				Tennyson Road Westbound				Huntwood Avenue Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	28	**67**	12	107	**57**	201	3	261	20	26	27	73	9	174	24	207	648
07:45 AM	51	57	9	117	56	169	8	233	19	**27**	**38**	84	10	211	25	246	680
08:00 AM	**54**	59	**15**	**128**	40	195	**24**	259	**32**	26	27	**85**	5	192	29	226	698
08:15 AM	36	47	12	95	55	**209**	12	**276**	20	18	20	58	**19**	**221**	**31**	**271**	**700**
Total Volume	169	230	48	447	208	774	47	1029	91	97	112	300	43	798	109	950	2726
% App. Total	37.8	51.5	10.7		20.2	75.2	4.6		30.3	32.3	37.3		4.5	84	11.5		
PHF	.782	.858	.800	.873	.912	.926	.490	.932	.711	.898	.737	.882	.566	.903	.879	.876	.974

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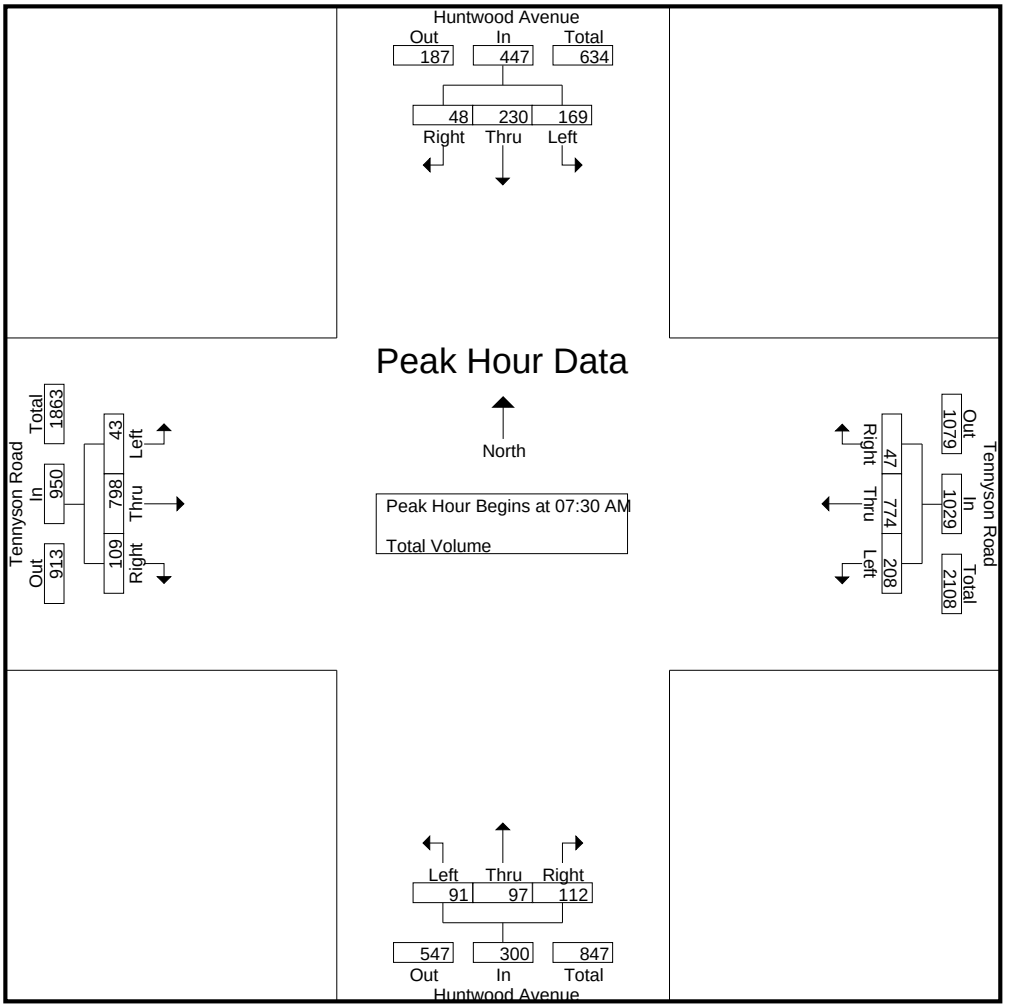
City of Hayward
N/S: Huntwood Avenue
E/W: Tennyson Road
Weather: Clear

File Name : 07_HWD_Huntwood_Tennyson AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:15 AM				07:30 AM			
+0 mins.	29	53	**15**	97	**57**	201	3	261	**35**	23	10	68	9	174	24	207
+15 mins.	28	**67**	12	107	56	169	8	233	20	26	27	73	10	211	25	246
+30 mins.	51	57	9	117	40	195	**24**	259	19	**27**	**38**	84	5	192	29	226
+45 mins.	**54**	59	15	**128**	55	**209**	12	**276**	32	26	27	**85**	**19**	**221**	**31**	**271**
Total Volume	162	236	51	449	208	774	47	1029	106	102	102	310	43	798	109	950
% App. Total	36.1	52.6	11.4		20.2	75.2	4.6		34.2	32.9	32.9		4.5	84	11.5	
PHF	.750	.881	.850	.877	.912	.926	.490	.932	.757	.944	.671	.912	.566	.903	.879	.876

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City of Hayward
N/S: Huntwood Avenue
E/W: Tennyson Road
Weather: Clear

File Name : 07_HWD_Huntwood_Tennyson PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Huntwood Avenue Southbound				Tennyson Road Westbound				Huntwood Avenue Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	34	33	13	80	38	175	9	222	45	70	42	157	33	198	38	269	728
04:15 PM	20	33	14	67	47	158	8	213	32	66	60	158	24	188	25	237	675
04:30 PM	15	34	16	65	41	148	18	207	49	86	54	189	32	199	31	262	723
04:45 PM	19	34	17	70	48	149	7	204	39	90	66	195	30	214	20	264	733
Total	88	134	60	282	174	630	42	846	165	312	222	699	119	799	114	1032	2859
05:00 PM	24	32	12	68	45	190	11	246	48	85	58	191	29	177	31	237	742
05:15 PM	9	36	12	57	46	187	11	244	28	91	47	166	36	175	17	228	695
05:30 PM	22	39	10	71	56	185	10	251	36	87	57	180	21	187	26	234	736
05:45 PM	20	35	18	73	33	160	7	200	32	53	45	130	33	205	30	268	671
Total	75	142	52	269	180	722	39	941	144	316	207	667	119	744	104	967	2844
Grand Total	163	276	112	551	354	1352	81	1787	309	628	429	1366	238	1543	218	1999	5703
Apprch %	29.6	50.1	20.3		19.8	75.7	4.5		22.6	46	31.4		11.9	77.2	10.9		
Total %	2.9	4.8	2	9.7	6.2	23.7	1.4	31.3	5.4	11	7.5	24	4.2	27.1	3.8	35.1	

	Huntwood Avenue Southbound				Tennyson Road Westbound				Huntwood Avenue Northbound				Tennyson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	19	34	**17**	70	48	149	7	204	39	90	**66**	**195**	30	**214**	20	**264**	733
05:00 PM	**24**	32	12	68	45	**190**	**11**	246	**48**	85	58	191	29	177	**31**	237	**742**
05:15 PM	9	36	12	57	46	187	11	244	28	**91**	47	166	**36**	175	17	228	695
05:30 PM	22	**39**	10	**71**	**56**	185	10	**251**	36	87	57	180	21	187	26	234	736
Total Volume	74	141	51	266	195	711	39	945	151	353	228	732	116	753	94	963	2906
% App. Total	27.8	53	19.2		20.6	75.2	4.1		20.6	48.2	31.1		12	78.2	9.8		
PHF	.771	.904	.750	.937	.871	.936	.886	.941	.786	.970	.864	.938	.806	.880	.758	.912	.979

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City of Hayward
N/S: Huntwood Avenue
E/W: Tennyson Road
Weather: Clear

File Name : 07_HWD_Huntwood_Tennyson PM
Site Code : 00319343
Start Date : 5/23/2019
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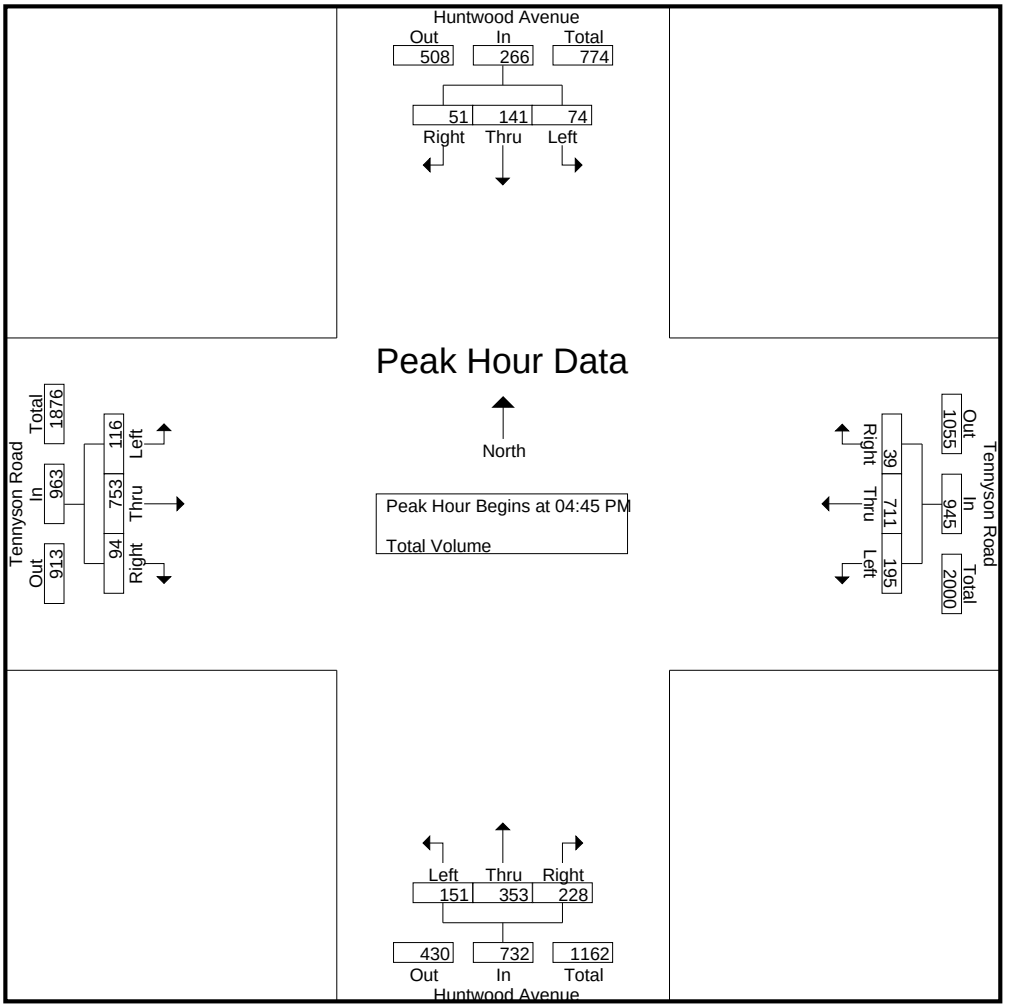

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:30 PM				04:00 PM			
+0 mins.	**34**	33	13	**80**	48	149	7	204	**49**	86	54	189	**33**	198	**38**	**269**
+15 mins.	20	33	14	67	45	**190**	**11**	246	39	90	**66**	**195**	24	188	25	237
+30 mins.	15	**34**	16	65	46	187	11	244	48	85	58	191	32	199	31	262
+45 mins.	19	34	**17**	70	**56**	185	10	**251**	28	**91**	47	166	30	**214**	20	264
Total Volume	88	134	60	282	195	711	39	945	164	352	225	741	119	799	114	1032
% App. Total	31.2	47.5	21.3		20.6	75.2	4.1		22.1	47.5	30.4		11.5	77.4	11	
PHF	.647	.985	.882	.881	.871	.936	.886	.941	.837	.967	.852	.950	.902	.933	.750	.959

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City of Hayward
N/S: Huntwood Avenue
E/W: Industrial Pkwy West
Weather: Clear

File Name : 08_HWD_Huntwood_Industrial W AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Huntwood Avenue Southbound				Industrial Parkway West Westbound				Huntwood Avenue Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	7	110	36	153	74	247	3	324	70	20	27	117	6	105	74	185	779
07:15 AM	16	108	30	154	80	259	6	345	41	33	21	95	15	97	96	208	802
07:30 AM	21	105	25	151	89	267	9	365	63	39	40	142	21	141	106	268	926
07:45 AM	25	126	15	166	104	272	11	387	46	23	19	88	16	113	86	215	856
Total	69	449	106	624	347	1045	29	1421	220	115	107	442	58	456	362	876	3363
08:00 AM	22	73	33	128	103	262	8	373	59	17	29	105	21	128	89	238	844
08:15 AM	17	94	32	143	86	235	10	331	55	19	22	96	17	109	85	211	781
08:30 AM	17	91	29	137	86	215	10	311	48	32	16	96	23	112	89	224	768
08:45 AM	11	78	32	121	71	202	7	280	46	23	17	86	33	102	94	229	716
Total	67	336	126	529	346	914	35	1295	208	91	84	383	94	451	357	902	3109
Grand Total	136	785	232	1153	693	1959	64	2716	428	206	191	825	152	907	719	1778	6472
Apprch %	11.8	68.1	20.1		25.5	72.1	2.4		51.9	25	23.2		8.5	51	40.4		
Total %	2.1	12.1	3.6	17.8	10.7	30.3	1	42	6.6	3.2	3	12.7	2.3	14	11.1	27.5	

	Huntwood Avenue Southbound				Industrial Parkway West Westbound				Huntwood Avenue Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	16	108	30	154	80	259	6	345	41	33	21	95	15	97	96	208	802
07:30 AM	21	105	25	151	89	267	9	365	**63**	**39**	**40**	**142**	**21**	**141**	**106**	**268**	**926**
07:45 AM	**25**	**126**	15	**166**	**104**	**272**	**11**	**387**	46	23	19	88	16	113	86	215	856
08:00 AM	22	73	**33**	128	103	262	8	373	59	17	29	105	21	128	89	238	844
Total Volume	84	412	103	599	376	1060	34	1470	209	112	109	430	73	479	377	929	3428
% App. Total	14	68.8	17.2		25.6	72.1	2.3		48.6	26	25.3		7.9	51.6	40.6		
PHF	.840	.817	.780	.902	.904	.974	.773	.950	.829	.718	.681	.757	.869	.849	.889	.867	.925

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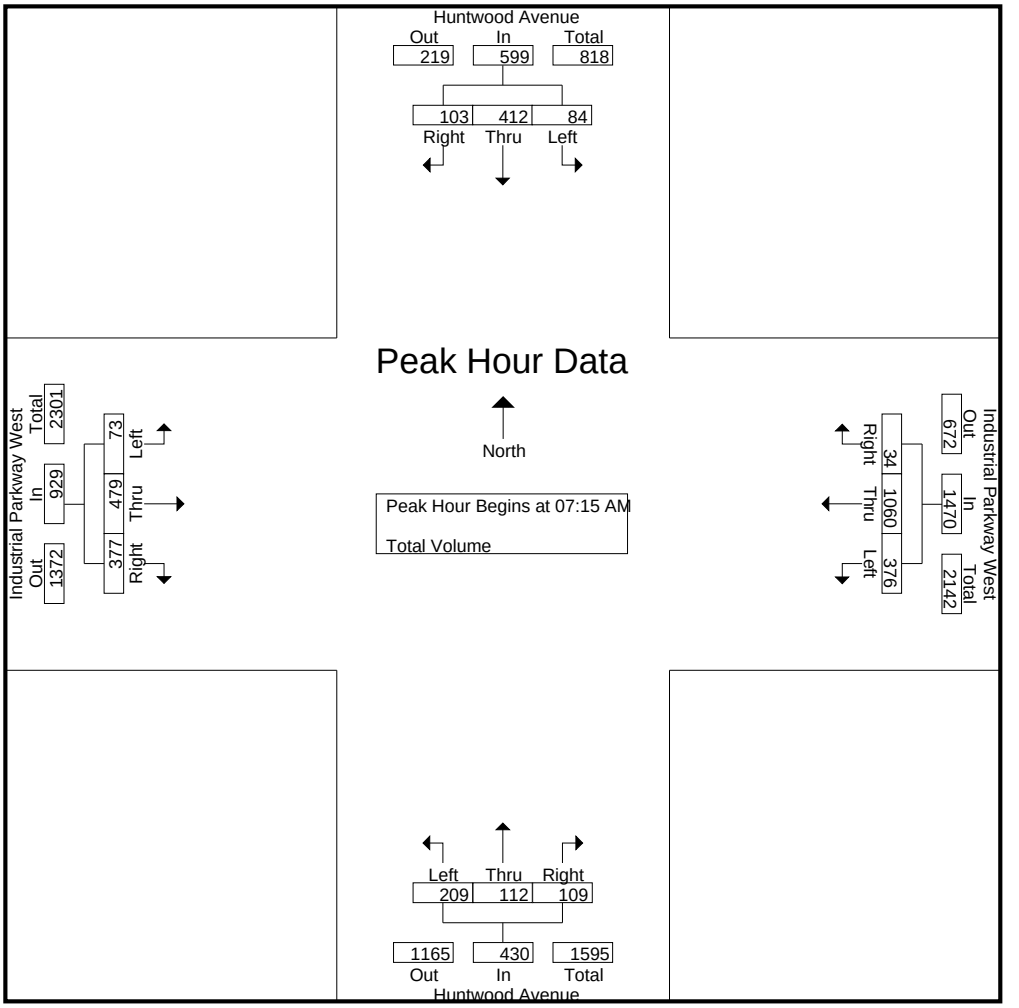
City of Hayward
N/S: Huntwood Avenue
E/W: Industrial Pkwy West
Weather: Clear

File Name : 08_HWD_Huntwood_Industrial W AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				07:30 AM			
+0 mins.	7	110	**36**	153	80	259	6	345	**70**	20	27	117	**21**	**141**	**106**	**268**
+15 mins.	16	108	30	154	89	267	9	365	41	33	21	95	16	113	86	215
+30 mins.	21	105	25	151	**104**	**272**	**11**	**387**	63	**39**	**40**	**142**	21	128	89	238
+45 mins.	**25**	**126**	15	**166**	103	262	8	373	46	23	19	88	17	109	85	211
Total Volume	69	449	106	624	376	1060	34	1470	220	115	107	442	75	491	366	932
% App. Total	11.1	72	17		25.6	72.1	2.3		49.8	26	24.2		8	52.7	39.3	
PHF	.690	.891	.736	.940	.904	.974	.773	.950	.786	.737	.669	.778	.893	.871	.863	.869

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City of Hayward
N/S: Huntwood Avenue
E/W: Industrial Pkwy West
Weather: Clear

File Name : 08_HWD_Huntwood_Industrial W PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Huntwood Avenue Southbound				Industrial Parkway West Westbound				Huntwood Avenue Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	18	33	27	78	27	160	23	210	115	109	82	306	76	298	47	421	1015
04:15 PM	15	31	24	70	27	135	24	186	80	123	71	274	65	220	36	321	851
04:30 PM	13	46	23	82	29	164	23	216	111	144	63	318	69	251	51	371	987
04:45 PM	20	38	15	73	22	156	22	200	100	155	69	324	74	282	61	417	1014
Total	66	148	89	303	105	615	92	812	406	531	285	1222	284	1051	195	1530	3867
05:00 PM	24	29	34	87	40	178	23	241	126	164	90	380	62	262	42	366	1074
05:15 PM	17	32	24	73	26	187	32	245	109	142	76	327	84	294	40	418	1063
05:30 PM	16	37	28	81	30	179	30	239	100	104	59	263	78	243	38	359	942
05:45 PM	21	33	32	86	25	175	20	220	85	85	58	228	60	266	39	365	899
Total	78	131	118	327	121	719	105	945	420	495	283	1198	284	1065	159	1508	3978
Grand Total	144	279	207	630	226	1334	197	1757	826	1026	568	2420	568	2116	354	3038	7845
Apprch %	22.9	44.3	32.9		12.9	75.9	11.2		34.1	42.4	23.5		18.7	69.7	11.7		
Total %	1.8	3.6	2.6	8	2.9	17	2.5	22.4	10.5	13.1	7.2	30.8	7.2	27	4.5	38.7	

	Huntwood Avenue Southbound				Industrial Parkway West Westbound				Huntwood Avenue Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	13	**46**	23	82	29	164	23	216	111	144	63	318	69	251	51	371	987
04:45 PM	20	38	15	73	22	156	22	200	100	155	69	324	74	282	**61**	417	1014
05:00 PM	**24**	29	**34**	**87**	**40**	178	23	241	**126**	**164**	**90**	**380**	62	262	42	366	**1074**
05:15 PM	17	32	24	73	26	**187**	**32**	**245**	109	142	76	327	**84**	**294**	40	**418**	1063
Total Volume	74	145	96	315	117	685	100	902	446	605	298	1349	289	1089	194	1572	4138
% App. Total	23.5	46	30.5		13	75.9	11.1		33.1	44.8	22.1		18.4	69.3	12.3		
PHF	.771	.788	.706	.905	.731	.916	.781	.920	.885	.922	.828	.888	.860	.926	.795	.940	.963

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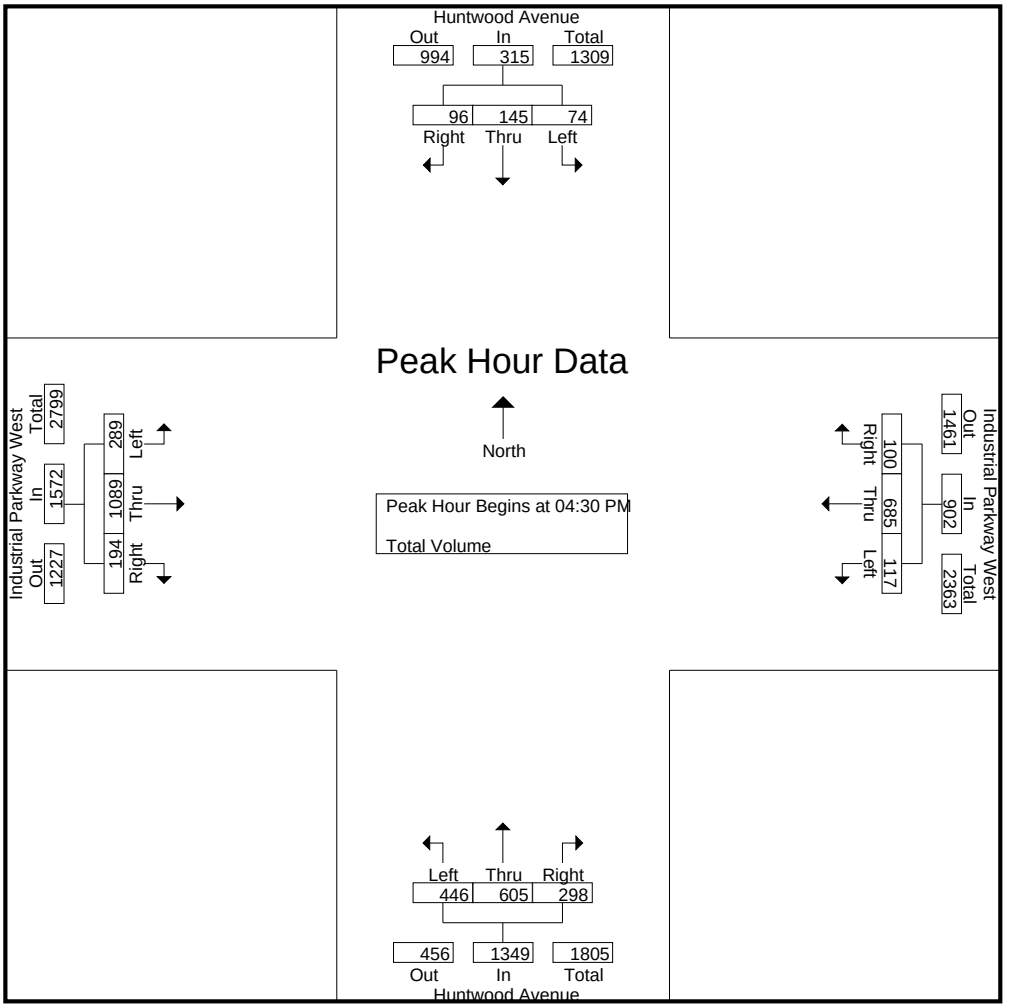
City of Hayward
N/S: Huntwood Avenue
E/W: Industrial Pkwy West
Weather: Clear

File Name : 08_HWD_Huntwood_Industrial W PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:30 PM				04:30 PM			
+0 mins.	**24**	29	**34**	**87**	**40**	178	23	241	111	144	63	318	69	251	51	371
+15 mins.	17	32	24	73	26	**187**	**32**	**245**	100	155	69	324	74	282	**61**	417
+30 mins.	16	**37**	28	81	30	179	30	239	**126**	**164**	**90**	**380**	62	262	42	366
+45 mins.	21	33	32	86	25	175	20	220	109	142	76	327	**84**	**294**	40	**418**
Total Volume	78	131	118	327	121	719	105	945	446	605	298	1349	289	1089	194	1572
% App. Total	23.9	40.1	36.1		12.8	76.1	11.1		33.1	44.8	22.1		18.4	69.3	12.3	
PHF	.813	.885	.868	.940	.756	.961	.820	.964	.885	.922	.828	.888	.860	.926	.795	.940

Counts Unlimited
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City of Hayward
N/S: Russ Road/Industrial Pkwy SW
E/W: Industrial Pkwy West
Weather: Clear

File Name : 09_HWD_Ruus_Industrial SW_Industrial W AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Russ Road Southbound				Industrial Parkway West Westbound				Industrial Parkway Southwest Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	10	83	22	115	92	247	7	346	8	19	1	28	2	118	15	135	624
07:15 AM	8	92	24	124	95	230	6	331	12	22	3	37	6	142	17	165	657
07:30 AM	17	104	27	148	75	245	9	329	11	15	0	26	6	189	21	216	719
07:45 AM	5	72	23	100	94	259	9	362	8	18	1	27	9	152	20	181	670
Total	40	351	96	487	356	981	31	1368	39	74	5	118	23	601	73	697	2670
08:00 AM	12	81	34	127	99	281	7	387	8	21	3	32	6	164	16	186	732
08:15 AM	8	65	24	97	93	205	6	304	12	25	1	38	4	145	15	164	603
08:30 AM	6	64	27	97	74	202	7	283	10	31	4	45	6	161	13	180	605
08:45 AM	5	47	35	87	99	219	5	323	18	22	3	43	11	170	20	201	654
Total	31	257	120	408	365	907	25	1297	48	99	11	158	27	640	64	731	2594
Grand Total	71	608	216	895	721	1888	56	2665	87	173	16	276	50	1241	137	1428	5264
Apprch %	7.9	67.9	24.1		27.1	70.8	2.1		31.5	62.7	5.8		3.5	86.9	9.6		
Total %	1.3	11.6	4.1	17	13.7	35.9	1.1	50.6	1.7	3.3	0.3	5.2	0.9	23.6	2.6	27.1	

	Russ Road Southbound				Industrial Parkway West Westbound				Industrial Parkway Southwest Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	8	92	24	124	95	230	6	331	**12**	**22**	**3**	**37**	6	142	17	165	657
07:30 AM	**17**	**104**	27	**148**	75	245	**9**	329	11	15	0	26	6	**189**	**21**	**216**	719
07:45 AM	5	72	23	100	94	259	9	362	8	18	1	27	**9**	152	20	181	670
08:00 AM	12	81	**34**	127	**99**	**281**	7	**387**	8	21	3	32	6	164	16	186	**732**
Total Volume	42	349	108	499	363	1015	31	1409	39	76	7	122	27	647	74	748	2778
% App. Total	8.4	69.9	21.6		25.8	72	2.2		32	62.3	5.7		3.6	86.5	9.9		
PHF	.618	.839	.794	.843	.917	.903	.861	.910	.813	.864	.583	.824	.750	.856	.881	.866	.949

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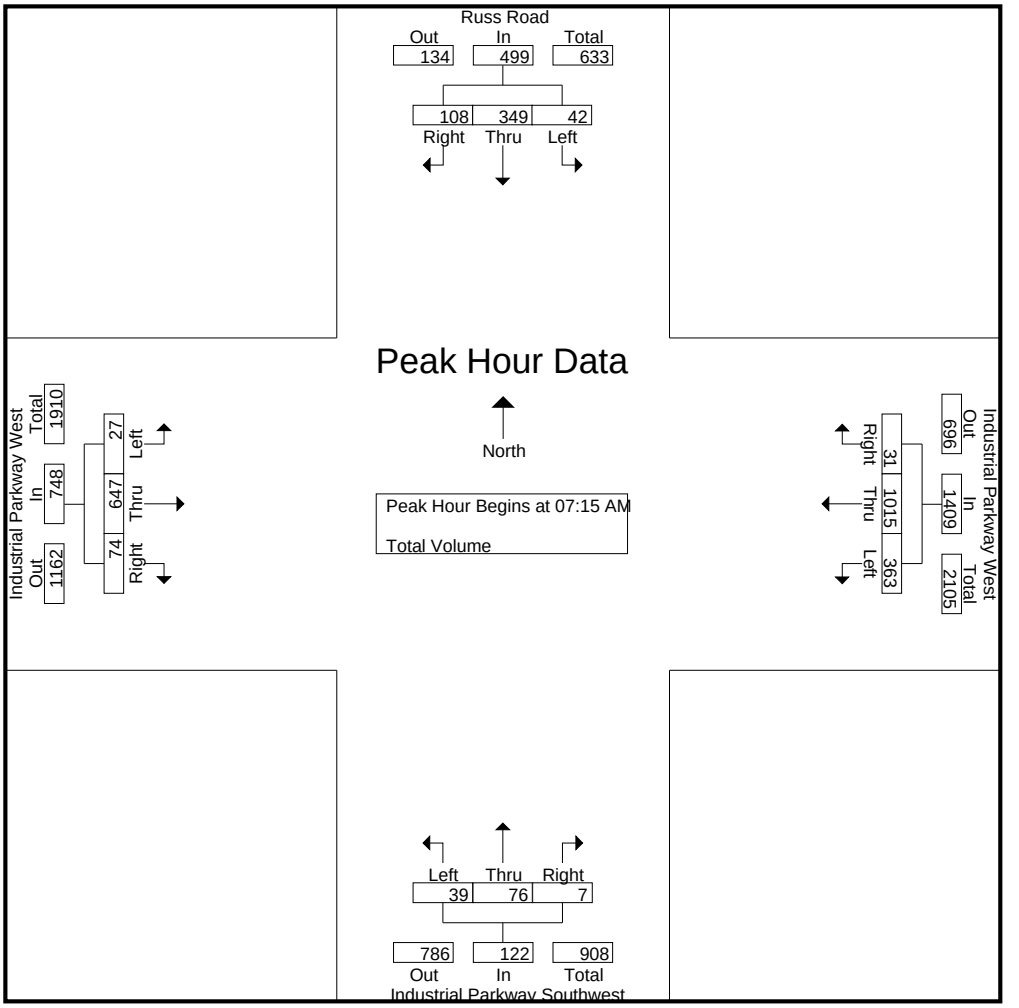
City of Hayward
N/S: Russ Road/Industrial Pkwy SW
E/W: Industrial Pkwy West
Weather: Clear

File Name : 09_HWD_Ruus_Industrial SW_Industrial W AM
Site Code : 00319343
Start Date : 5/23/2019



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				08:00 AM				07:15 AM			
+0 mins.	8	92	24	124	95	230	6	331	8	21	3	32	6	142	17	165
+15 mins.	**17**	**104**	27	**148**	75	245	**9**	329	12	25	1	38	6	**189**	**21**	**216**
+30 mins.	5	72	23	100	94	259	9	362	10	**31**	**4**	**45**	**9**	152	20	181
+45 mins.	12	81	**34**	127	**99**	**281**	7	**387**	**18**	22	3	43	6	164	16	186
Total Volume	42	349	108	499	363	1015	31	1409	48	99	11	158	27	647	74	748
% App. Total	8.4	69.9	21.6		25.8	72	2.2		30.4	62.7	7		3.6	86.5	9.9	
PHF	.618	.839	.794	.843	.917	.903	.861	.910	.667	.798	.688	.878	.750	.856	.881	.866

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City of Hayward
N/S: Russ Road/Industrial Pkwy SW
E/W: Industrial Pkwy West
Weather: Clear

File Name : 09_HWD_Ruus_Industrial SW_Industrial W PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Russ Road Southbound				Industrial Parkway West Westbound				Industrial Parkway Southwest Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	40	19	67	68	210	23	301	30	102	4	136	26	195	13	234	738
04:15 PM	7	34	26	67	70	187	12	269	28	107	0	135	17	157	9	183	654
04:30 PM	6	34	22	62	69	234	17	320	36	106	2	144	10	207	16	233	759
04:45 PM	8	29	18	55	68	205	9	282	37	106	2	145	20	202	16	238	720
Total	29	137	85	251	275	836	61	1172	131	421	8	560	73	761	54	888	2871
05:00 PM	6	44	16	66	80	255	14	349	53	103	1	157	17	172	17	206	778
05:15 PM	5	32	12	49	76	232	15	323	45	92	2	139	15	195	13	223	734
05:30 PM	2	34	18	54	83	249	11	343	22	112	2	136	18	174	15	207	740
05:45 PM	8	35	15	58	78	204	13	295	33	116	1	150	13	183	16	212	715
Total	21	145	61	227	317	940	53	1310	153	423	6	582	63	724	61	848	2967
Grand Total	50	282	146	478	592	1776	114	2482	284	844	14	1142	136	1485	115	1736	5838
Apprch %	10.5	59	30.5		23.9	71.6	4.6		24.9	73.9	1.2		7.8	85.5	6.6		
Total %	0.9	4.8	2.5	8.2	10.1	30.4	2	42.5	4.9	14.5	0.2	19.6	2.3	25.4	2	29.7	

	Russ Road Southbound				Industrial Parkway West Westbound				Industrial Parkway Southwest Northbound				Industrial Parkway West Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	6	34	**22**	62	69	234	**17**	320	36	**106**	**2**	144	10	**207**	16	233	759
04:45 PM	**8**	29	18	55	68	205	9	282	37	106	2	145	**20**	202	16	**238**	720
05:00 PM	6	**44**	16	**66**	**80**	**255**	14	**349**	**53**	103	1	**157**	17	172	**17**	206	**778**
05:15 PM	5	32	12	49	76	232	15	323	45	92	2	139	15	195	13	223	734
Total Volume	25	139	68	232	293	926	55	1274	171	407	7	585	62	776	62	900	2991
% App. Total	10.8	59.9	29.3		23	72.7	4.3		29.2	69.6	1.2		6.9	86.2	6.9		
PHF	.781	.790	.773	.879	.916	.908	.809	.913	.807	.960	.875	.932	.775	.937	.912	.945	.961

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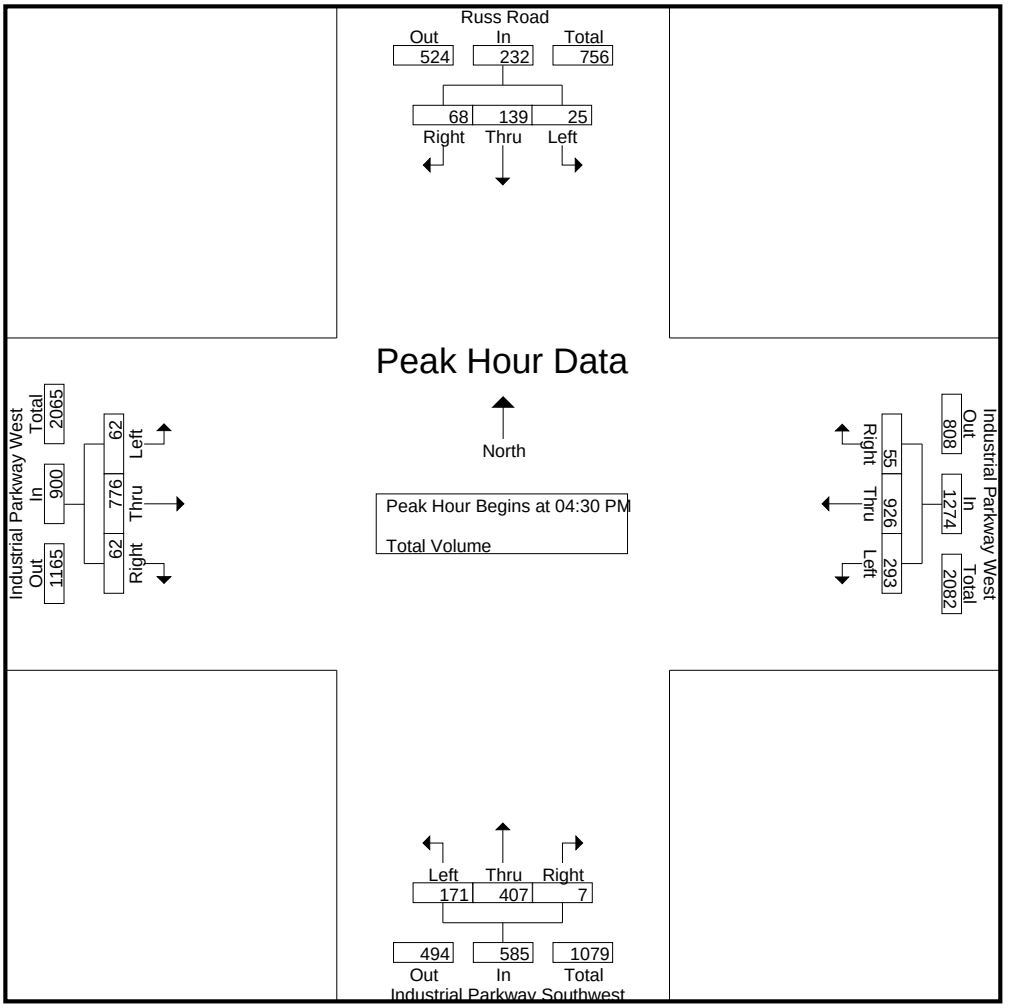
City of Hayward
N/S: Russ Road/Industrial Pkwy SW
E/W: Industrial Pkwy West
Weather: Clear

File Name : 09_HWD_Ruus_Industrial SW_Industrial W PM
Site Code : 00319343
Start Date : 5/23/2019



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:30 PM				04:30 PM			
+0 mins.	**8**	**40**	19	**67**	80	**255**	14	**349**	36	**106**	**2**	144	10	**207**	16	233
+15 mins.	7	34	**26**	67	76	232	**15**	323	37	106	2	145	**20**	202	16	**238**
+30 mins.	6	34	22	62	**83**	249	11	343	**53**	103	1	**157**	17	172	**17**	206
+45 mins.	8	29	18	55	78	204	13	295	45	92	2	139	15	195	13	223
Total Volume	29	137	85	251	317	940	53	1310	171	407	7	585	62	776	62	900
% App. Total	11.6	54.6	33.9		24.2	71.8	4		29.2	69.6	1.2		6.9	86.2	6.9	
PHF	.906	.856	.817	.937	.955	.922	.883	.938	.807	.960	.875	.932	.775	.937	.912	.945

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City of Hayward
N/S: I-880 Southbound Ramps
E/W: Industrial Pkwy West
Weather: Clear

File Name : 10_HWD_880S_Industrial W AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	I-880 Southbound Ramps Southbound			Industrial Parkway West Westbound			Industrial Parkway West Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	80	85	165	162	95	257	36	110	146	568
07:15 AM	81	44	125	151	127	278	44	124	168	571
07:30 AM	67	61	128	163	102	265	33	127	160	553
07:45 AM	62	85	147	274	89	363	33	161	194	704
Total	290	275	565	750	413	1163	146	522	668	2396
08:00 AM	78	86	164	283	107	390	33	145	178	732
08:15 AM	83	108	191	235	126	361	52	141	193	745
08:30 AM	68	99	167	199	171	370	30	118	148	685
08:45 AM	90	69	159	193	176	369	30	120	150	678
Total	319	362	681	910	580	1490	145	524	669	2840
Grand Total	609	637	1246	1660	993	2653	291	1046	1337	5236
Apprch %	48.9	51.1		62.6	37.4		21.8	78.2		
Total %	11.6	12.2	23.8	31.7	19	50.7	5.6	20	25.5	

	I-880 Southbound Ramps Southbound			Industrial Parkway West Westbound			Industrial Parkway West Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	62	85	147	274	89	363	33	**161**	**194**	704
08:00 AM	78	86	164	**283**	107	**390**	33	145	178	732
08:15 AM	**83**	**108**	**191**	235	126	361	**52**	141	193	**745**
08:30 AM	68	99	167	199	**171**	370	30	118	148	685
Total Volume	291	378	669	991	493	1484	148	565	713	2866
% App. Total	43.5	56.5		66.8	33.2		20.8	79.2		
PHF	.877	.875	.876	.875	.721	.951	.712	.877	.919	.962

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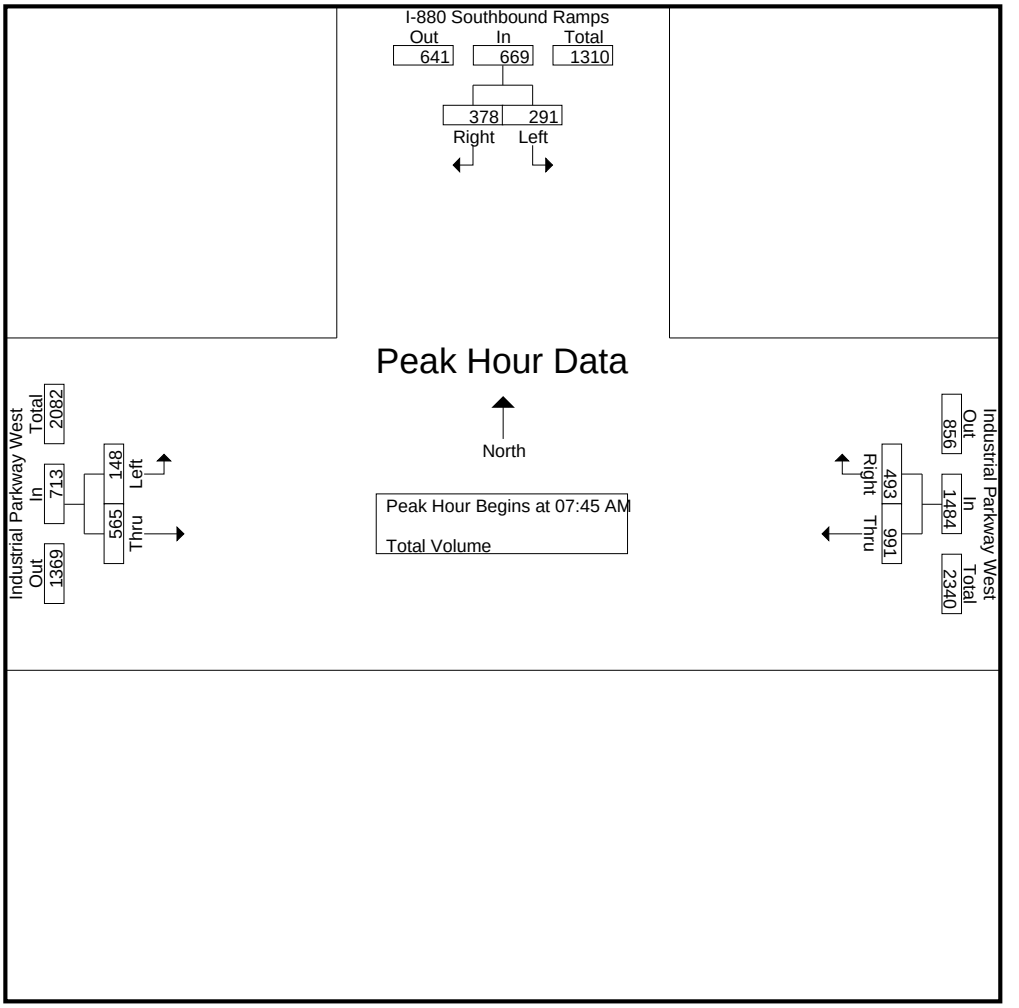
City of Hayward
N/S: I-880 Southbound Ramps
E/W: Industrial Pkwy West
Weather: Clear

File Name : 10_HWD_880S_Industrial W AM
Site Code : 00319343
Start Date : 5/23/2019



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			08:00 AM			07:30 AM		
+0 mins.	78	86	164	**283**	107	**390**	33	127	160
+15 mins.	83	**108**	**191**	235	126	361	33	**161**	**194**
+30 mins.	68	99	167	199	171	370	33	145	178
+45 mins.	**90**	69	159	193	**176**	369	**52**	141	193
Total Volume	319	362	681	910	580	1490	151	574	725
% App. Total	46.8	53.2		61.1	38.9		20.8	79.2	
PHF	.886	.838	.891	.804	.824	.955	.726	.891	.934

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City of Hayward
N/S: I-880 Southbound Ramps
E/W: Industrial Pkwy West
Weather: Clear

File Name : 10_HWD_880S_Industrial W PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	I-880 Southbound Ramps Southbound			Industrial Parkway West Westbound			Industrial Parkway West Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	106	63	169	182	46	228	92	272	364	761
04:15 PM	97	70	167	188	59	247	72	233	305	719
04:30 PM	94	72	166	201	52	253	93	236	329	748
04:45 PM	111	67	178	198	38	236	76	240	316	730
Total	408	272	680	769	195	964	333	981	1314	2958
05:00 PM	105	61	166	198	67	265	92	291	383	814
05:15 PM	95	61	156	225	60	285	87	208	295	736
05:30 PM	101	57	158	173	61	234	86	218	304	696
05:45 PM	103	65	168	197	65	262	68	199	267	697
Total	404	244	648	793	253	1046	333	916	1249	2943
Grand Total	812	516	1328	1562	448	2010	666	1897	2563	5901
Apprch %	61.1	38.9		77.7	22.3		26	74		
Total %	13.8	8.7	22.5	26.5	7.6	34.1	11.3	32.1	43.4	

	I-880 Southbound Ramps Southbound			Industrial Parkway West Westbound			Industrial Parkway West Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	94	**72**	166	201	52	253	**93**	236	329	748
04:45 PM	**111**	67	**178**	198	38	236	76	240	316	730
05:00 PM	105	61	166	198	**67**	265	92	**291**	**383**	**814**
05:15 PM	95	61	156	**225**	60	**285**	87	208	295	736
Total Volume	405	261	666	822	217	1039	348	975	1323	3028
% App. Total	60.8	39.2		79.1	20.9		26.3	73.7		
PHF	.912	.906	.935	.913	.810	.911	.935	.838	.864	.930

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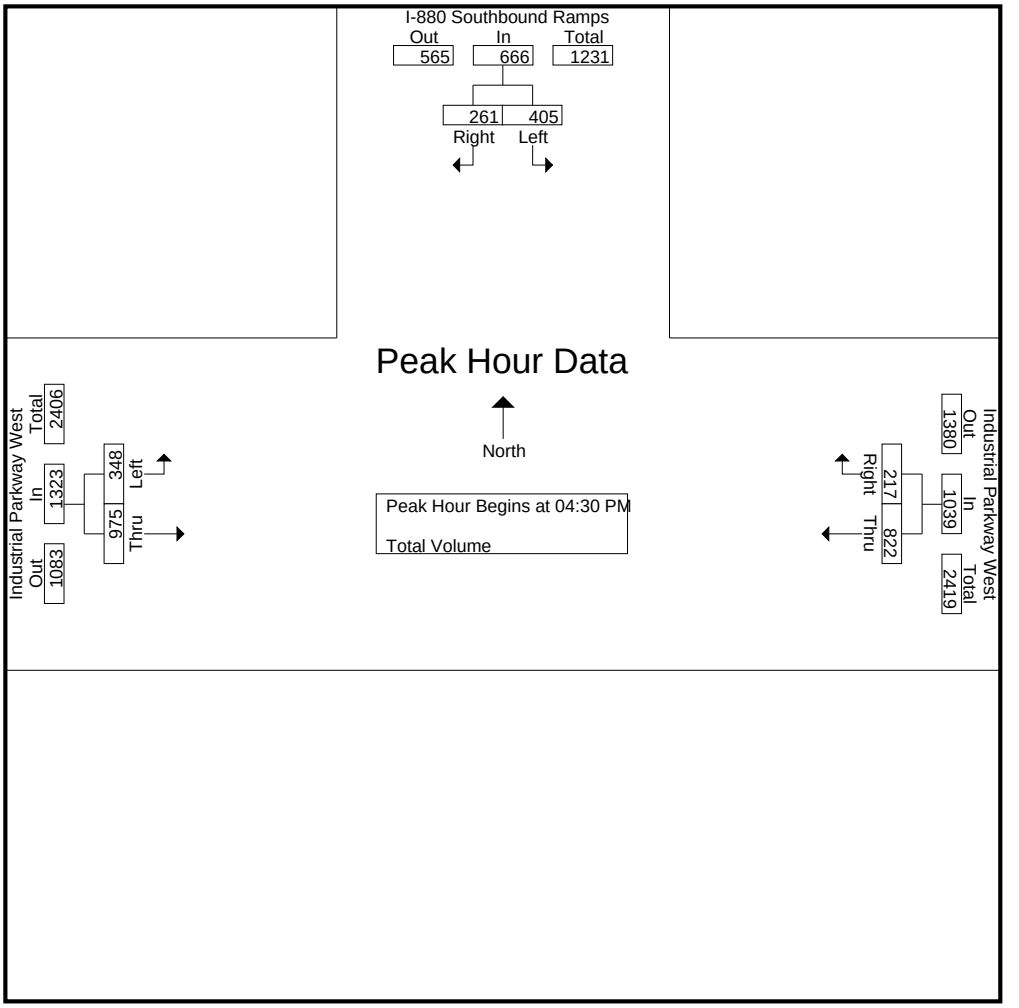
City of Hayward
N/S: I-880 Southbound Ramps
E/W: Industrial Pkwy West
Weather: Clear

File Name : 10_HWD_880S_Industrial W PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			05:00 PM			04:15 PM		
+0 mins.	106	63	169	198	**67**	265	72	233	305
+15 mins.	97	70	167	**225**	60	**285**	**93**	236	329
+30 mins.	94	**72**	166	173	61	234	76	240	316
+45 mins.	**111**	67	**178**	197	65	262	92	**291**	**383**
Total Volume	408	272	680	793	253	1046	333	1000	1333
% App. Total	60	40		75.8	24.2		25	75	
PHF	.919	.944	.955	.881	.944	.918	.895	.859	.870

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City of Hayward
N/S: Industrial Pkwy SW/I-880 NB Off Rmp
E/W: Whipple Road
Weather: Clear

File Name : 11_HWD_Industrial SW_880N_Whipple AM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Industrial Parkway Southwest Southbound				Whipple Road Westbound				I-880 Northbound Off Ramp Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	74	0	236	310	0	179	39	218	76	70	63	209	48	81	0	129	866
07:15 AM	65	0	203	268	0	200	22	222	97	83	56	236	37	114	0	151	877
07:30 AM	76	0	214	290	0	192	31	223	140	117	76	333	43	168	0	211	1057
07:45 AM	64	0	223	287	0	209	37	246	108	108	77	293	79	235	0	314	1140
Total	279	0	876	1155	0	780	129	909	421	378	272	1071	207	598	0	805	3940
08:00 AM	82	0	223	305	0	200	41	241	132	118	90	340	84	152	0	236	1122
08:15 AM	84	1	204	289	0	263	26	289	149	113	79	341	55	157	0	212	1131
08:30 AM	62	0	175	237	0	226	30	256	146	101	80	327	65	125	0	190	1010
08:45 AM	60	1	146	207	0	234	19	253	134	107	77	318	70	146	0	216	994
Total	288	2	748	1038	0	923	116	1039	561	439	326	1326	274	580	0	854	4257
Grand Total	567	2	1624	2193	0	1703	245	1948	982	817	598	2397	481	1178	0	1659	8197
Apprch %	25.9	0.1	74.1		0	87.4	12.6		41	34.1	24.9		29	71	0		
Total %	6.9	0	19.8	26.8	0	20.8	3	23.8	12	10	7.3	29.2	5.9	14.4	0	20.2	

	Industrial Parkway Southwest Southbound				Whipple Road Westbound				I-880 Northbound Off Ramp Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	76	0	214	290	0	192	31	223	140	117	76	333	43	168	0	211	1057
07:45 AM	64	0	**223**	287	0	209	37	246	108	108	77	293	79	**235**	0	**314**	**1140**
08:00 AM	82	0	223	**305**	0	200	**41**	241	132	**118**	**90**	340	**84**	152	0	236	1122
08:15 AM	**84**	**1**	204	289	0	**263**	26	**289**	**149**	113	79	**341**	55	157	0	212	1131
Total Volume	306	1	864	1171	0	864	135	999	529	456	322	1307	261	712	0	973	4450
% App. Total	26.1	0.1	73.8		0	86.5	13.5		40.5	34.9	24.6		26.8	73.2	0		
PHF	.911	.250	.969	.960	.000	.821	.823	.864	.888	.966	.894	.958	.777	.757	.000	.775	.976

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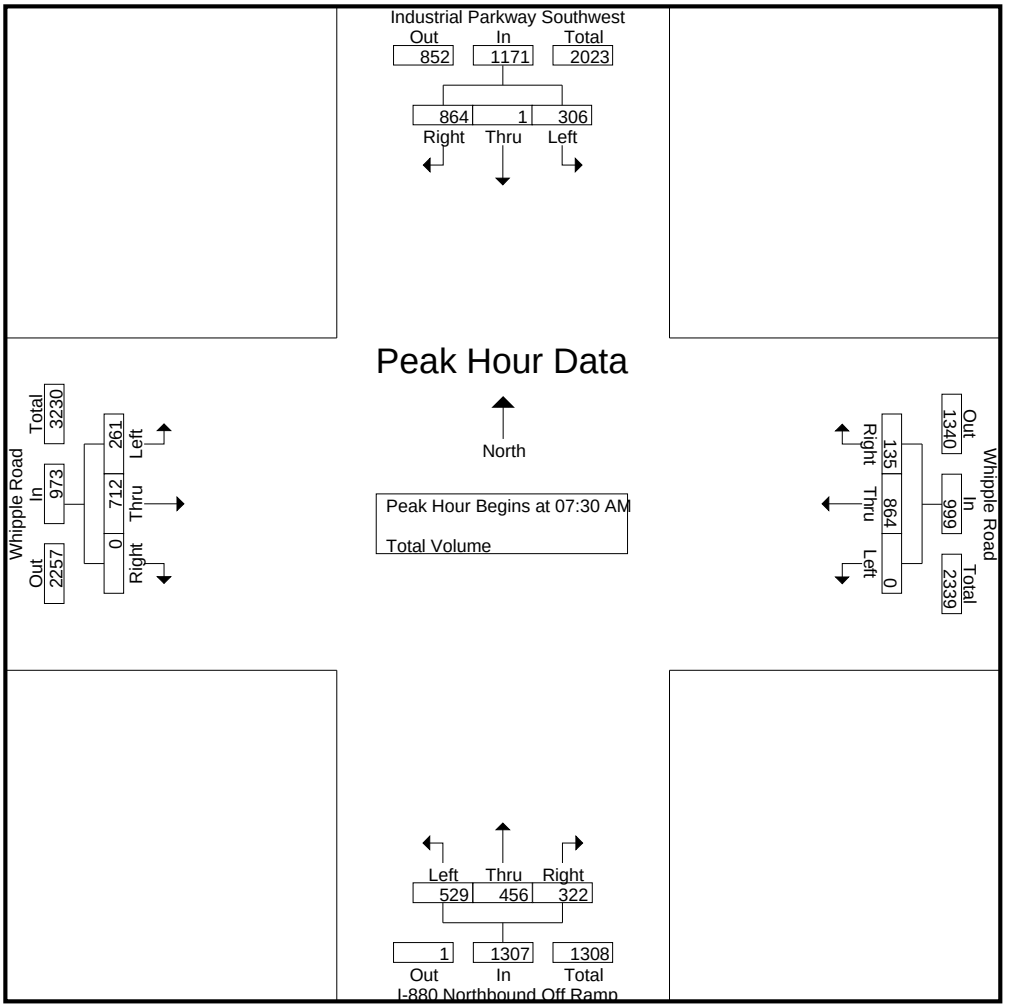
City of Hayward
N/S: Industrial Pkwy SW/I-880 NB Off Rmp
E/W: Whipple Road
Weather: Clear

File Name : 11_HWD_Industrial SW_880N_Whipple AM
Site Code : 00319343
Start Date : 5/23/2019



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				08:00 AM				08:00 AM				07:30 AM			
+0 mins.	76	0	214	290	0	200	**41**	241	132	**118**	**90**	340	43	168	0	211
+15 mins.	64	0	**223**	287	0	**263**	26	**289**	**149**	113	79	**341**	79	**235**	0	**314**
+30 mins.	82	0	223	**305**	0	226	30	256	146	101	80	327	**84**	152	0	236
+45 mins.	**84**	**1**	204	289	0	234	19	253	134	107	77	318	55	157	0	212
Total Volume	306	1	864	1171	0	923	116	1039	561	439	326	1326	261	712	0	973
% App. Total	26.1	0.1	73.8		0	88.8	11.2		42.3	33.1	24.6		26.8	73.2	0	
PHF	.911	.250	.969	.960	.000	.877	.707	.899	.941	.930	.906	.972	.777	.757	.000	.775

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Hayward
N/S: Industrial Pkwy SW/I-880 NB Off Rmp
E/W: Whipple Road
Weather: Clear

File Name : 11_HWD_Industrial SW_880N_Whipple PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 1

Groups Printed- Total Volume

	Industrial Parkway Southwest Southbound				Whipple Road Westbound				I-880 Northbound Off Ramp Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	56	0	139	195	0	240	63	303	42	202	32	276	171	188	0	359	1133
04:15 PM	53	0	135	188	0	221	82	303	32	186	20	238	179	175	0	354	1083
04:30 PM	60	0	132	192	0	223	79	302	50	199	31	280	164	208	0	372	1146
04:45 PM	56	0	129	185	0	226	62	288	41	191	35	267	159	161	0	320	1060
Total	225	0	535	760	0	910	286	1196	165	778	118	1061	673	732	0	1405	4422
05:00 PM	63	0	151	214	0	235	75	310	32	214	25	271	178	182	0	360	1155
05:15 PM	56	5	151	212	0	232	87	319	48	210	22	280	169	195	0	364	1175
05:30 PM	60	0	158	218	0	240	70	310	53	192	26	271	157	191	0	348	1147
05:45 PM	61	0	170	231	0	214	71	285	52	187	40	279	170	191	0	361	1156
Total	240	5	630	875	0	921	303	1224	185	803	113	1101	674	759	0	1433	4633
Grand Total	465	5	1165	1635	0	1831	589	2420	350	1581	231	2162	1347	1491	0	2838	9055
Apprch %	28.4	0.3	71.3		0	75.7	24.3		16.2	73.1	10.7		47.5	52.5	0		
Total %	5.1	0.1	12.9	18.1	0	20.2	6.5	26.7	3.9	17.5	2.6	23.9	14.9	16.5	0	31.3	

	Industrial Parkway Southwest Southbound				Whipple Road Westbound				I-880 Northbound Off Ramp Northbound				Whipple Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**63**	0	151	214	0	235	75	310	32	**214**	25	271	**178**	182	0	360	1155
05:15 PM	56	**5**	151	212	0	232	**87**	**319**	48	210	22	**280**	169	**195**	0	**364**	**1175**
05:30 PM	60	0	158	218	0	**240**	70	310	**53**	192	26	271	157	191	0	348	1147
05:45 PM	61	0	**170**	**231**	0	214	71	285	52	187	**40**	279	170	191	0	361	1156
Total Volume	240	5	630	875	0	921	303	1224	185	803	113	1101	674	759	0	1433	4633
% App. Total	27.4	0.6	72		0	75.2	24.8		16.8	72.9	10.3		47	53	0		
PHF	.952	.250	.926	.947	.000	.959	.871	.959	.873	.938	.706	.983	.947	.973	.000	.984	.986

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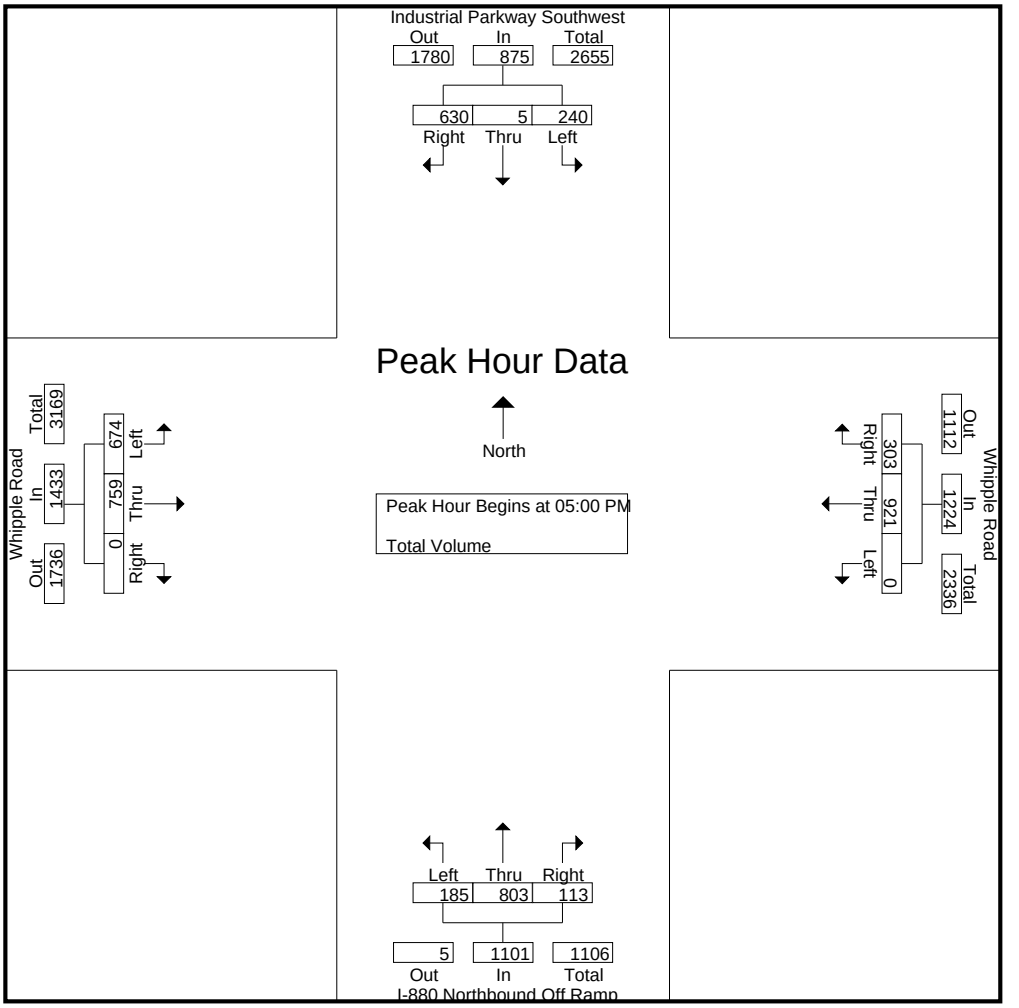
City of Hayward
N/S: Industrial Pkwy SW/I-880 NB Off Rmp
E/W: Whipple Road
Weather: Clear

File Name : 11_HWD_Industrial SW_880N_Whipple PM
Site Code : 00319343
Start Date : 5/23/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				05:00 PM				05:00 PM			
+0 mins.	**63**	0	151	214	0	226	62	288	32	**214**	25	271	**178**	182	0	360
+15 mins.	56	**5**	151	212	0	235	75	310	48	210	22	**280**	169	**195**	0	**364**
+30 mins.	60	0	158	218	0	232	**87**	**319**	**53**	192	26	271	157	191	0	348
+45 mins.	61	0	**170**	**231**	0	**240**	70	310	52	187	**40**	279	170	191	0	361
Total Volume	240	5	630	875	0	933	294	1227	185	803	113	1101	674	759	0	1433
% App. Total	27.4	0.6	72		0	76	24		16.8	72.9	10.3		47	53	0	
PHF	.952	.250	.926	.947	.000	.972	.845	.962	.873	.938	.706	.983	.947	.973	.000	.984

APPENDIX B

EXISTING AND EXISTING PLUS PROJECT LEVEL OF SERVICE WORKSHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	286	107	328	146	93	29	247	931	76	23	1421	140
Future Volume (vph)	286	107	328	146	93	29	247	931	76	23	1421	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5028		1770	5017	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5028		1770	5017	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	321	120	369	164	104	33	278	1046	85	26	1597	157
RTOR Reduction (vph)	0	0	310	0	0	30	0	6	0	0	7	0
Lane Group Flow (vph)	321	120	59	164	104	3	278	1125	0	26	1747	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	16.2	15.0	15.0	11.0	9.8	9.8	23.0	50.1		25.1	52.2	
Effective Green, g (s)	16.2	15.0	15.0	11.0	9.8	9.8	23.0	50.1		25.1	52.2	
Actuated g/C Ratio	0.14	0.13	0.13	0.09	0.08	0.08	0.19	0.42		0.21	0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	470	449	200	319	293	131	344	2131		375	2215	
v/s Ratio Prot	c0.09	0.03		0.05	0.03		c0.16	0.22		0.01	c0.35	
v/s Ratio Perm			c0.04			0.00						
v/c Ratio	0.68	0.27	0.30	0.51	0.35	0.02	0.81	0.53		0.07	0.79	
Uniform Delay, d1	48.6	46.6	46.8	51.1	51.2	49.8	45.5	25.3		37.2	28.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	0.3	0.8	1.4	0.7	0.1	13.0	0.9		0.4	2.9	
Delay (s)	52.6	47.0	47.6	52.5	52.0	49.9	58.5	26.2		37.6	31.2	
Level of Service	D	D	D	D	D	D	E	C		D	C	
Approach Delay (s)		49.5			52.0			32.6			31.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	118.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	2	270	3	2	0	212	953	3	9	1542	227
Future Volume (vph)	317	2	270	3	2	0	212	953	3	9	1542	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00		0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1808		3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1808		3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	320	2	273	3	2	0	214	963	3	9	1558	229
RTOR Reduction (vph)	0	0	236	0	0	0	0	0	0	0	0	72
Lane Group Flow (vph)	320	2	37	0	5	0	214	966	0	9	1558	157
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	19.4	19.4	19.4		1.4		14.2	101.7		1.5	89.0	89.0
Effective Green, g (s)	19.4	19.4	19.4		1.4		14.2	101.7		1.5	89.0	89.0
Actuated g/C Ratio	0.14	0.14	0.14		0.01		0.10	0.72		0.01	0.63	0.63
Clearance Time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	469	254	216		17		343	3640		18	3187	992
v/s Ratio Prot	c0.09	0.00			c0.00		c0.06	0.19		0.01	c0.31	
v/s Ratio Perm			0.02									0.10
v/c Ratio	0.68	0.01	0.17		0.29		0.62	0.27		0.50	0.49	0.16
Uniform Delay, d1	58.4	53.0	54.2		69.8		61.3	7.1		69.9	14.3	11.0
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.1	0.0	0.4		9.4		3.5	0.2		20.2	0.5	0.3
Delay (s)	62.4	53.0	54.6		79.2		64.9	7.2		90.1	14.8	11.3
Level of Service	E	D	D		E		E	A		F	B	B
Approach Delay (s)		58.8			79.2			17.7			14.7	
Approach LOS		E			E			B			B	

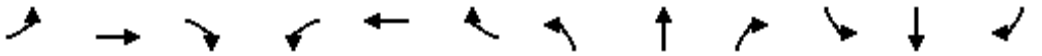
Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	0	29	0	0	0	59	1203	0	0	1857	36
Future Volume (vph)	19	0	29	0	0	0	59	1203	0	0	1857	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.92					1.00	1.00			1.00	
Flt Protected		0.98					0.95	1.00			1.00	
Satd. Flow (prot)		1678					1770	3539			3529	
Flt Permitted		0.98					0.95	1.00			1.00	
Satd. Flow (perm)		1678					1770	3539			3529	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	20	0	30	0	0	0	61	1253	0	0	1934	38
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	4	0	0	0	0	61	1253	0	0	1971	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		5.0					7.1	74.5			63.4	
Effective Green, g (s)		5.0					7.1	74.5			63.4	
Actuated g/C Ratio		0.06					0.08	0.84			0.72	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		94					142	2979			2528	
v/s Ratio Prot							0.03	c0.35			c0.56	
v/s Ratio Perm		0.00										
v/c Ratio		0.04					0.43	0.42			0.78	
Uniform Delay, d1		39.5					38.8	1.7			8.1	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		0.2					2.1	0.4			2.5	
Delay (s)		39.7					40.9	2.2			10.5	
Level of Service		D					D	A			B	
Approach Delay (s)		39.7			0.0			3.9			10.5	
Approach LOS		D			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	88.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	63.3%	ICU Level of Service	B
Analysis Period (min)	15		

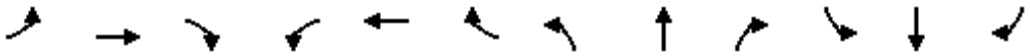
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	127	233	18	201	269	298	746	7	104	1184	574
Future Volume (vph)	245	127	233	18	201	269	298	746	7	104	1184	574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3147	1441	1770	3539	1583	3433	5078		1770	4836	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3147	1441	1770	3539	1583	3433	5078		1770	4836	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	253	131	240	19	207	277	307	769	7	107	1221	592
RTOR Reduction (vph)	0	90	90	0	0	229	0	1	0	0	90	0
Lane Group Flow (vph)	253	161	30	19	207	48	307	775	0	107	1723	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	7.0	20.1	20.1	0.8	13.9	13.9	9.9	33.7		8.2	32.0	
Effective Green, g (s)	7.0	20.1	20.1	0.8	13.9	13.9	9.9	33.7		8.2	32.0	
Actuated g/C Ratio	0.09	0.25	0.25	0.01	0.17	0.17	0.12	0.42		0.10	0.40	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	301	792	362	17	616	275	425	2144		181	1939	
v/s Ratio Prot	c0.07	0.05		0.01	c0.06		c0.09	0.15		0.06	c0.36	
v/s Ratio Perm			0.02			0.03						
v/c Ratio	0.84	0.20	0.08	1.12	0.34	0.18	0.72	0.36		0.59	0.89	
Uniform Delay, d1	35.9	23.5	22.8	39.5	28.9	28.1	33.6	15.7		34.2	22.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.6	0.1	0.1	258.7	0.3	0.3	6.0	0.5		5.1	6.5	
Delay (s)	54.5	23.7	22.9	298.2	29.2	28.4	39.6	16.2		39.3	28.8	
Level of Service	D	C	C	F	C	C	D	B		D	C	
Approach Delay (s)		36.0			38.9			22.8			29.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

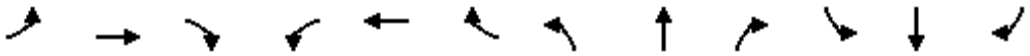
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	8	224	28	14	12	283	582	8	9	1525	108
Future Volume (vph)	136	8	224	28	14	12	283	582	8	9	1525	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779	1583		1761		3433	5075		1770	5035	
Flt Permitted		0.76	1.00		0.82		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419	1583		1486		3433	5075		1770	5035	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	143	8	236	29	15	13	298	613	8	9	1605	114
RTOR Reduction (vph)	0	0	188	0	10	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	151	48	0	47	0	298	620	0	9	1710	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		15.1	15.1		15.1		12.4	44.5		2.4	32.5	
Effective Green, g (s)		15.1	15.1		15.1		12.4	44.5		2.4	32.5	
Actuated g/C Ratio		0.20	0.20		0.20		0.17	0.59		0.03	0.43	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		286	319		299		569	3019		56	2187	
v/s Ratio Prot							c0.09	0.12		0.01	c0.34	
v/s Ratio Perm		c0.11	0.03		0.03							
v/c Ratio		0.53	0.15		0.16		0.52	0.21		0.16	0.78	
Uniform Delay, d1		26.7	24.6		24.6		28.5	7.0		35.2	18.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.8	0.2		0.2		0.9	0.2		1.3	2.9	
Delay (s)		28.4	24.8		24.8		29.4	7.1		36.6	21.0	
Level of Service		C	C		C		C	A		D	C	
Approach Delay (s)		26.2			24.8			14.4			21.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	2	9	49	0	67	4	335	21	30	290	10
Future Volume (vph)	12	2	9	49	0	67	4	335	21	30	290	10
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
Hourly flow rate (vph)	13	2	10	54	0	74	4	368	23	33	319	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	25	128	395	363
Volume Left (vph)	13	54	4	33
Volume Right (vph)	10	74	23	11
Hadj (s)	-0.10	-0.23	0.00	0.03
Departure Headway (s)	5.9	5.5	4.8	4.9
Degree Utilization, x	0.04	0.20	0.53	0.49
Capacity (veh/h)	501	574	726	712
Control Delay (s)	9.1	9.9	13.1	12.5
Approach Delay (s)	9.1	9.9	13.1	12.5
Approach LOS	A	A	B	B

Intersection Summary				
Delay	12.3			
Level of Service	B			
Intersection Capacity Utilization	49.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	798	109	208	774	47	91	97	112	169	230	48
Future Volume (vph)	43	798	109	208	774	47	91	97	112	169	230	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1815	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.43	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	809	1863	1583	1290	1815	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	44	823	112	214	798	48	94	100	115	174	237	49
RTOR Reduction (vph)	0	0	70	0	0	24	0	0	79	0	6	0
Lane Group Flow (vph)	44	823	42	214	798	24	94	100	36	174	280	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	5.2	35.8	35.8	16.6	47.2	47.2	30.3	30.3	30.3	30.3	30.3	
Effective Green, g (s)	5.2	35.8	35.8	16.6	47.2	47.2	30.3	30.3	30.3	30.3	30.3	
Actuated g/C Ratio	0.05	0.37	0.37	0.17	0.49	0.49	0.31	0.31	0.31	0.31	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	95	1314	587	304	912	775	254	585	497	405	570	
v/s Ratio Prot	0.02	0.23		c0.12	c0.43			0.05			c0.15	
v/s Ratio Perm			0.03			0.01	0.12		0.02	0.13		
v/c Ratio	0.46	0.63	0.07	0.70	0.88	0.03	0.37	0.17	0.07	0.43	0.49	
Uniform Delay, d1	44.2	24.8	19.6	37.6	22.0	12.7	25.6	23.9	23.2	26.2	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	0.9	0.1	7.2	11.5	0.1	0.9	0.1	0.1	3.3	3.0	
Delay (s)	47.8	25.8	19.6	44.8	33.4	12.8	26.6	24.1	23.3	29.5	29.8	
Level of Service	D	C	B	D	C	B	C	C	C	C	C	
Approach Delay (s)		26.0			34.8			24.5			29.7	
Approach LOS		C			C			C			C	

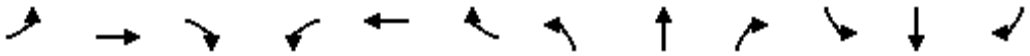
Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	13.7
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	479	377	376	1060	34	209	112	109	84	412	103
Future Volume (vph)	73	479	377	376	1060	34	209	112	109	84	412	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5061		1610	3310	1583	1770	3433	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5061		1610	3310	1583	1770	3433	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	78	515	405	404	1140	37	225	120	117	90	443	111
RTOR Reduction (vph)	0	0	307	0	3	0	0	0	94	0	15	0
Lane Group Flow (vph)	78	515	98	404	1174	0	112	233	23	90	539	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	11.8	24.9	24.9	25.1	38.2		20.1	20.1	20.1	15.0	15.0	
Effective Green, g (s)	11.8	24.9	24.9	25.1	38.2		20.1	20.1	20.1	15.0	15.0	
Actuated g/C Ratio	0.11	0.24	0.24	0.24	0.37		0.19	0.19	0.19	0.15	0.15	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	202	854	382	430	1875		313	645	308	257	499	
v/s Ratio Prot	0.04	0.15		c0.23	c0.23		0.07	c0.07		0.05	c0.16	
v/s Ratio Perm			0.06						0.01			
v/c Ratio	0.39	0.60	0.26	0.94	0.63		0.36	0.36	0.07	0.35	1.08	
Uniform Delay, d1	42.3	34.7	31.6	38.3	26.6		35.9	35.9	33.9	39.7	44.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.2	0.4	28.3	0.7		0.7	0.3	0.1	0.8	63.9	
Delay (s)	43.5	35.9	32.0	66.6	27.3		36.6	36.3	34.0	40.5	108.0	
Level of Service	D	D	C	E	C		D	D	C	D	F	
Approach Delay (s)		34.9			37.3			35.8			98.6	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	47.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	103.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

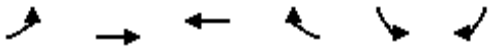
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	647	74	363	1015	31	39	76	7	42	349	108
Future Volume (vph)	27	647	74	363	1015	31	39	76	7	42	349	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3485		1770	3539	1583	1770	1840		1770	1797	
Flt Permitted	0.22	1.00		0.33	1.00	1.00	0.19	1.00		0.70	1.00	
Satd. Flow (perm)	405	3485		620	3539	1583	347	1840		1305	1797	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	681	78	382	1068	33	41	80	7	44	367	114
RTOR Reduction (vph)	0	11	0	0	0	13	0	4	0	0	14	0
Lane Group Flow (vph)	28	748	0	382	1068	20	41	83	0	44	467	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	250	2156		383	2189	979	93	494		350	482	
v/s Ratio Prot		0.21			0.30			0.05			c0.26	
v/s Ratio Perm	0.07			c0.62		0.01	0.12			0.03		
v/c Ratio	0.11	0.35		1.00	0.49	0.02	0.44	0.17		0.13	0.97	
Uniform Delay, d1	6.2	7.4		15.2	8.3	5.9	24.3	22.4		22.1	28.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		45.0	0.2	0.0	14.4	0.7		0.7	34.0	
Delay (s)	6.4	7.5		60.2	8.5	5.9	38.7	23.1		22.9	62.9	
Level of Service	A	A		E	A	A	D	C		C	E	
Approach Delay (s)		7.5			21.7			28.1			59.6	
Approach LOS		A			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

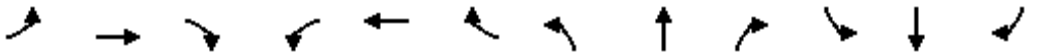
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	148	585	991	493	291	378
Future Volume (vph)	148	585	991	493	291	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	154	609	1032	514	303	394
RTOR Reduction (vph)	0	0	0	154	0	267
Lane Group Flow (vph)	154	609	1032	360	303	127
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	13.6	56.0	38.2	38.2	31.0	31.0
Effective Green, g (s)	13.6	56.0	38.2	38.2	31.0	31.0
Actuated g/C Ratio	0.14	0.58	0.40	0.40	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	250	2062	1406	629	570	510
v/s Ratio Prot	c0.09	0.17	c0.29		c0.17	
v/s Ratio Perm				0.23		0.08
v/c Ratio	0.62	0.30	0.73	0.57	0.53	0.25
Uniform Delay, d1	38.8	10.1	24.6	22.6	26.6	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.4	2.0	1.3	3.5	1.2
Delay (s)	43.3	10.5	26.6	23.8	30.1	25.1
Level of Service	D	B	C	C	C	C
Approach Delay (s)		17.1	25.7		27.3	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	13.3
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

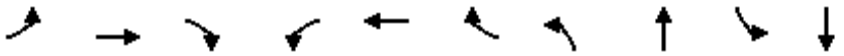


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	261	712	0	0	864	135	529	456	322	306	0	864
Future Volume (vph)	261	712	0	0	864	135	529	456	322	306	0	864
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1761	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1761	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	266	727	0	0	882	138	540	496	329	312	0	882
RTOR Reduction (vph)	0	0	0	0	0	110	0	0	72	0	0	100
Lane Group Flow (vph)	266	727	0	0	882	28	486	550	257	312	0	782
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	40.2	40.2	40.2	23.8		40.4
Effective Green, g (s)	11.7	40.6			24.2	24.2	40.2	40.2	40.2	23.8		40.4
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.34	0.34	0.34	0.20		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	563	589	530	351		938
v/s Ratio Prot	0.08	0.21			c0.17		0.29	c0.31		0.18		c0.28
v/s Ratio Perm						0.02			0.16			
v/c Ratio	0.80	0.61			0.86	0.09	0.86	0.93	0.48	0.89		0.83
Uniform Delay, d1	53.0	33.1			46.3	38.9	37.3	38.6	31.7	46.8		36.7
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	12.4	2.3			9.4	0.5	12.9	22.0	0.7	22.8		6.4
Delay (s)	65.4	35.4			55.7	39.5	50.3	60.6	32.4	69.6		43.1
Level of Service	E	D			E	D	D	E	C	E		D
Approach Delay (s)		43.4			53.5			50.1			50.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Queues
1: Harder Rd & Mission Blvd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	321	120	369	164	104	33	278	1131	26	1754
v/c Ratio	0.68	0.27	0.72	0.51	0.36	0.16	0.81	0.53	0.07	0.79
Control Delay	56.5	48.3	14.8	57.3	55.2	1.8	64.3	26.7	40.1	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.5	48.3	14.8	57.3	55.2	1.8	64.3	26.7	40.1	32.5
Queue Length 50th (ft)	120	44	10	61	40	0	197	224	16	415
Queue Length 95th (ft)	174	74	102	101	71	0	#351	307	44	548
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	727	750	615	727	750	396	375	2137	375	2220
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.60	0.23	0.14	0.08	0.74	0.53	0.07	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Mission Blvd & Tennyson Rd

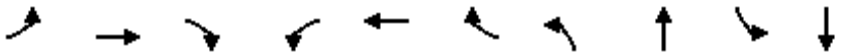
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	320	2	273	5	214	966	9	1558	229
v/c Ratio	0.68	0.01	0.61	0.06	0.63	0.25	0.11	0.47	0.21
Control Delay	65.8	50.0	11.8	66.6	69.3	6.4	67.6	14.4	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	50.0	11.8	66.6	69.3	6.4	67.6	14.4	3.4
Queue Length 50th (ft)	147	2	0	5	99	71	8	238	10
Queue Length 95th (ft)	192	10	83	20	139	180	28	394	57
Internal Link Dist (ft)		523		508		721		258	
Turn Bay Length (ft)	470				510		235		
Base Capacity (vph)	580	314	494	140	701	3871	361	3304	1096
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.01	0.55	0.04	0.31	0.25	0.02	0.47	0.21

Intersection Summary

Queues
3: Mission Blvd & Valle Vista Ave

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	50	61	1253	1972
v/c Ratio	0.30	0.36	0.41	0.75
Control Delay	17.6	43.3	2.3	11.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.6	43.3	2.3	11.9
Queue Length 50th (ft)	1	32	60	340
Queue Length 95th (ft)	35	71	100	552
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	237	1022	3046	2622
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.21	0.06	0.41	0.75

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	251	120	19	207	277	307	776	107	1813
v/c Ratio	0.80	0.27	0.23	0.20	0.42	0.60	0.75	0.34	0.48	0.85
Control Delay	54.5	12.7	2.4	40.9	32.1	10.1	46.1	15.8	38.5	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	12.7	2.4	40.9	32.1	10.1	46.1	15.8	38.5	23.4
Queue Length 50th (ft)	61	25	0	9	47	0	73	89	47	250
Queue Length 95th (ft)	#128	61	15	30	78	62	#140	138	97	#363
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	317	1241	648	93	1171	709	408	2265	280	2135
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.20	0.19	0.20	0.18	0.39	0.75	0.34	0.38	0.85

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	151	236	57	298	621	9	1719
v/c Ratio	0.53	0.46	0.18	0.53	0.19	0.03	0.78
Control Delay	33.7	7.0	21.4	31.9	7.1	27.0	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	7.0	21.4	31.9	7.1	27.0	22.1
Queue Length 50th (ft)	64	0	17	66	30	4	226
Queue Length 95th (ft)	116	53	45	98	88	16	#368
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	322	542	347	826	3219	378	2197
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.44	0.16	0.36	0.19	0.02	0.78

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

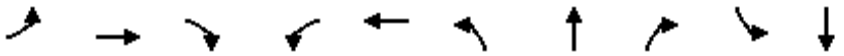
Queues
7: Huntwood Ave & Tennyson Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	44	823	112	214	798	48	94	100	115	174	286
v/c Ratio	0.30	0.65	0.17	0.69	0.86	0.06	0.36	0.17	0.20	0.42	0.49
Control Delay	48.4	28.5	5.1	49.4	33.3	3.6	33.1	26.9	6.5	31.7	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	28.5	5.1	49.4	33.3	3.6	33.1	26.9	6.5	31.7	30.6
Queue Length 50th (ft)	26	212	0	125	441	0	45	44	0	85	138
Queue Length 95th (ft)	65	311	36	213	#723	16	109	100	43	175	259
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	471	1697	817	471	928	816	258	595	584	412	586
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.48	0.14	0.45	0.86	0.06	0.36	0.17	0.20	0.42	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Huntwood Ave & Industrial Pkwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	78	515	405	404	1177	112	233	117	90	554
v/c Ratio	0.30	0.62	0.59	0.93	0.62	0.36	0.36	0.29	0.35	1.07
Control Delay	44.2	38.2	7.0	68.9	28.6	40.8	38.5	9.2	45.1	100.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	38.2	7.0	68.9	28.6	40.8	38.5	9.2	45.1	100.3
Queue Length 50th (ft)	46	158	0	257	241	69	72	0	53	~204
Queue Length 95th (ft)	99	211	72	#498	289	140	122	49	111	#356
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	434	1944	1052	434	2782	521	1071	591	260	519
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.26	0.38	0.93	0.42	0.21	0.22	0.20	0.35	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

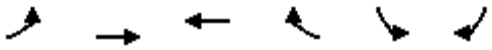
Queues
9: Industrial Pkwy & Russ Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	759	382	1068	33	41	87	44	481
v/c Ratio	0.11	0.35	1.00	0.49	0.03	0.45	0.17	0.13	0.97
Control Delay	7.6	7.6	64.8	9.3	2.3	42.2	22.3	23.4	63.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	7.6	64.8	9.3	2.3	42.2	22.3	23.4	63.8
Queue Length 50th (ft)	5	82	170	137	0	17	31	17	229
Queue Length 95th (ft)	16	113	#366	181	9	#58	67	42	#422
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	249	2168	383	2189	992	92	498	350	496
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.35	1.00	0.49	0.03	0.45	0.17	0.13	0.97

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
10: Industrial Pkwy W & I-880 SB Ramp



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	154	589	1032	514	303	394
v/c Ratio	0.62	0.29	0.73	0.66	0.53	0.51
Control Delay	48.8	10.5	29.4	16.7	30.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	10.5	29.4	16.7	30.7	5.1
Queue Length 50th (ft)	90	88	276	122	150	0
Queue Length 95th (ft)	145	118	#388	264	233	64
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	460	2143	1405	783	570	777
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.27	0.73	0.66	0.53	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: I-880 Northbound Ramp & Whipple Rd

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	266	727	882	138	486	550	329	312	882
v/c Ratio	0.80	0.61	0.86	0.32	0.86	0.93	0.55	0.89	0.85
Control Delay	71.0	35.7	56.0	8.7	54.0	62.7	24.8	74.9	40.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.0	35.7	56.0	8.7	54.0	62.7	24.8	74.9	40.2
Queue Length 50th (ft)	105	245	243	0	365	427	135	239	309
Queue Length 95th (ft)	#170	311	#300	54	#561	#652	229	#409	#420
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	429	572	600	611	350	1033
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.61	0.86	0.32	0.85	0.92	0.54	0.89	0.85

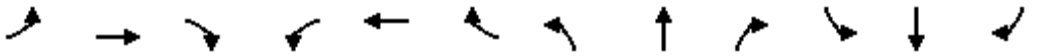
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	103	300	98	113	38	282	1479	124	58	1109	179
Future Volume (vph)	259	103	300	98	113	38	282	1479	124	58	1109	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5026		1770	4979	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5026		1770	4979	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	291	116	337	110	127	43	317	1662	139	65	1246	201
RTOR Reduction (vph)	0	0	292	0	0	39	0	6	0	0	14	0
Lane Group Flow (vph)	291	116	45	110	127	4	317	1795	0	65	1433	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	15.2	15.6	15.6	9.4	9.8	9.8	25.0	50.1		25.0	50.1	
Effective Green, g (s)	15.2	15.6	15.6	9.4	9.8	9.8	25.0	50.1		25.0	50.1	
Actuated g/C Ratio	0.13	0.13	0.13	0.08	0.08	0.08	0.21	0.43		0.21	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	445	471	210	275	296	132	377	2150		377	2130	
v/s Ratio Prot	c0.08	0.03		0.03	c0.04		c0.18	c0.36		0.04	0.29	
v/s Ratio Perm			0.03			0.00						
v/c Ratio	0.65	0.25	0.21	0.40	0.43	0.03	0.84	0.84		0.17	0.67	
Uniform Delay, d1	48.4	45.5	45.3	51.2	51.0	49.3	44.1	29.8		37.6	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.3	0.5	1.0	1.0	0.1	15.4	4.0		1.0	1.7	
Delay (s)	51.9	45.8	45.8	52.1	52.0	49.4	59.6	33.8		38.6	28.6	
Level of Service	D	D	D	D	D	D	E	C		D	C	
Approach Delay (s)		48.2			51.6			37.7			29.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	117.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	3	214	9	12	11	325	1455	1	32	1032	296
Future Volume (vph)	293	3	214	9	12	11	325	1455	1	32	1032	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1824	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1824	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	296	3	216	9	12	11	328	1470	1	32	1042	299
RTOR Reduction (vph)	0	0	188	0	0	11	0	0	0	0	0	126
Lane Group Flow (vph)	296	3	28	0	21	0	328	1471	0	32	1042	173
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	18.2	18.2	18.2		4.9	4.9	18.8	95.3		5.6	82.1	82.1
Effective Green, g (s)	18.2	18.2	18.2		4.9	4.9	18.8	95.3		5.6	82.1	82.1
Actuated g/C Ratio	0.13	0.13	0.13		0.03	0.03	0.13	0.67		0.04	0.58	0.58
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	440	238	202		62	54	454	3412		69	2939	915
v/s Ratio Prot	c0.09	0.00			c0.01		c0.10	c0.29		0.02	0.20	
v/s Ratio Perm			0.02			0.00						0.11
v/c Ratio	0.67	0.01	0.14		0.34	0.01	0.72	0.43		0.46	0.35	0.19
Uniform Delay, d1	59.1	54.1	54.9		67.0	66.2	59.1	10.8		66.7	15.9	14.2
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.0	0.0	0.3		3.2	0.1	5.6	0.4		4.9	0.3	0.5
Delay (s)	63.1	54.1	55.2		70.2	66.3	64.7	11.2		71.6	16.2	14.6
Level of Service	E	D	E		E	E	E	B		E	B	B
Approach Delay (s)		59.7			68.8			21.0			17.2	
Approach LOS		E			E			C			B	

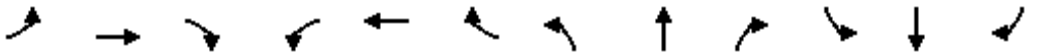
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	0	52	0	0	0	47	1846	0	0	1255	39
Future Volume (vph)	22	0	52	0	0	0	47	1846	0	0	1255	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.91					1.00	1.00			1.00	
Flt Protected		0.99					0.95	1.00			1.00	
Satd. Flow (prot)		1662					1770	3539			3523	
Flt Permitted		0.99					0.95	1.00			1.00	
Satd. Flow (perm)		1662					1770	3539			3523	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	23	0	54	0	0	0	49	1923	0	0	1307	41
RTOR Reduction (vph)	0	50	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	27	0	0	0	0	49	1923	0	0	1347	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		5.9					5.1	72.7			63.6	
Effective Green, g (s)		5.9					5.1	72.7			63.6	
Actuated g/C Ratio		0.07					0.06	0.83			0.73	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		111					103	2937			2557	
v/s Ratio Prot							0.03	c0.54			0.38	
v/s Ratio Perm		0.02										
v/c Ratio		0.24					0.48	0.65			0.53	
Uniform Delay, d1		38.7					40.0	2.8			5.3	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		1.1					3.4	1.2			0.8	
Delay (s)		39.8					43.4	3.9			6.1	
Level of Service		D					D	A			A	
Approach Delay (s)		39.8			0.0			4.9			6.1	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

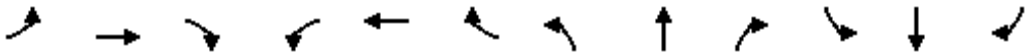
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	495	182	437	11	117	138	270	1236	17	145	902	248
Future Volume (vph)	495	182	437	11	117	138	270	1236	17	145	902	248
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.92	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3113	1441	1770	3539	1583	3433	5075		1770	4921	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3113	1441	1770	3539	1583	3433	5075		1770	4921	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	510	188	451	11	121	142	278	1274	18	149	930	256
RTOR Reduction (vph)	0	157	156	0	0	121	0	1	0	0	51	0
Lane Group Flow (vph)	510	257	69	11	121	21	278	1291	0	149	1135	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	13.0	23.3	23.3	0.8	11.1	11.1	7.0	26.0		9.0	28.0	
Effective Green, g (s)	13.0	23.3	23.3	0.8	11.1	11.1	7.0	26.0		9.0	28.0	
Actuated g/C Ratio	0.17	0.31	0.31	0.01	0.15	0.15	0.09	0.34		0.12	0.37	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	586	953	441	18	516	230	315	1733		209	1810	
v/s Ratio Prot	c0.15	c0.08		0.01	0.03		0.08	c0.25		0.08	c0.23	
v/s Ratio Perm			0.05			0.01						
v/c Ratio	0.87	0.27	0.16	0.61	0.23	0.09	0.88	0.74		0.71	0.63	
Uniform Delay, d1	30.7	20.0	19.2	37.5	28.7	28.1	34.1	22.1		32.3	19.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	13.3	0.2	0.2	48.7	0.2	0.2	23.9	3.0		10.9	1.7	
Delay (s)	44.0	20.1	19.4	86.2	29.0	28.3	58.0	25.1		43.2	21.4	
Level of Service	D	C	B	F	C	C	E	C		D	C	
Approach Delay (s)		30.6			30.9			30.9			23.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

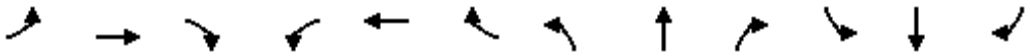
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	16	271	19	8	10	266	1460	21	17	760	125
Future Volume (vph)	214	16	271	19	8	10	266	1460	21	17	760	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1780	1583		1747		3433	5075		1770	4977	
Flt Permitted		0.71	1.00		0.82		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1327	1583		1463		3433	5075		1770	4977	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	225	17	285	20	8	11	280	1537	22	18	800	132
RTOR Reduction (vph)	0	0	223	0	9	0	0	1	0	0	27	0
Lane Group Flow (vph)	0	242	62	0	30	0	280	1558	0	18	905	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		12.1	43.2		2.4	31.5	
Effective Green, g (s)		16.4	16.4		16.4		12.1	43.2		2.4	31.5	
Actuated g/C Ratio		0.22	0.22		0.22		0.16	0.58		0.03	0.42	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		290	347		320		555	2931		56	2095	
v/s Ratio Prot							c0.08	c0.31		0.01	0.18	
v/s Ratio Perm		c0.18	0.04		0.02							
v/c Ratio		0.83	0.18		0.10		0.50	0.53		0.32	0.43	
Uniform Delay, d1		27.9	23.7		23.3		28.6	9.6		35.4	15.3	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		18.3	0.3		0.1		0.7	0.7		3.3	0.7	
Delay (s)		46.2	24.0		23.4		29.3	10.3		38.7	16.0	
Level of Service		D	C		C		C	B		D	B	
Approach Delay (s)		34.2			23.4			13.2			16.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		

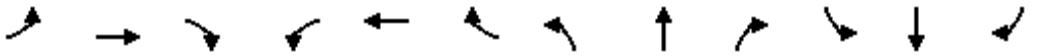
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	8	10	36	4	33	19	229	34	60	368	10
Future Volume (vph)	9	8	10	36	4	33	19	229	34	60	368	10
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
Hourly flow rate (vph)	10	9	11	40	4	36	21	252	37	66	404	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	30	80	310	481
Volume Left (vph)	10	40	21	66
Volume Right (vph)	11	36	37	11
Hadj (s)	-0.12	-0.14	-0.02	0.05
Departure Headway (s)	5.8	5.7	4.8	4.7
Degree Utilization, x	0.05	0.13	0.41	0.62
Capacity (veh/h)	516	553	729	756
Control Delay (s)	9.1	9.5	11.1	15.0
Approach Delay (s)	9.1	9.5	11.1	15.0
Approach LOS	A	A	B	B

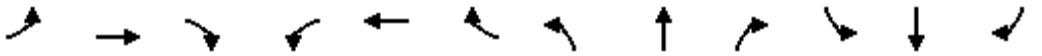
Intersection Summary				
Delay	12.9			
Level of Service	B			
Intersection Capacity Utilization	51.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	753	94	195	711	39	151	353	228	74	141	51
Future Volume (vph)	116	753	94	195	711	39	151	353	228	74	141	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1788	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.55	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	1020	1863	1583	566	1788	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	120	776	97	201	733	40	156	364	235	76	145	53
RTOR Reduction (vph)	0	0	58	0	0	22	0	0	165	0	11	0
Lane Group Flow (vph)	120	776	39	201	733	18	156	364	70	76	187	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	12.1	40.6	40.6	16.5	45.0	45.0	30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	12.1	40.6	40.6	16.5	45.0	45.0	30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.12	0.40	0.40	0.16	0.45	0.45	0.30	0.30	0.30	0.30	0.30	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	212	1425	637	289	831	706	303	554	471	168	532	
v/s Ratio Prot	0.07	0.22		c0.11	c0.39			c0.20			0.10	
v/s Ratio Perm			0.02			0.01	0.15		0.04	0.13		
v/c Ratio	0.57	0.54	0.06	0.70	0.88	0.03	0.51	0.66	0.15	0.45	0.35	
Uniform Delay, d1	41.9	23.0	18.4	39.8	25.5	15.6	29.4	30.9	26.0	28.7	27.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	0.4	0.0	7.1	13.0	0.1	1.5	2.8	0.1	8.6	1.8	
Delay (s)	45.3	23.5	18.5	46.9	38.5	15.7	30.8	33.7	26.2	37.3	29.6	
Level of Service	D	C	B	D	D	B	C	C	C	D	C	
Approach Delay (s)		25.6			39.3			30.8			31.7	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	31.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	13.7
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

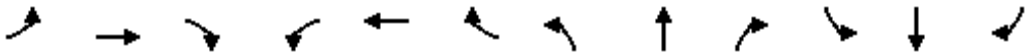
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	1089	194	117	685	100	446	605	298	74	145	96
Future Volume (vph)	289	1089	194	117	685	100	446	605	298	74	145	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4988		1610	3365	1583	1770	3328	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4988		1610	3365	1583	1770	3328	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	311	1171	209	126	737	108	480	651	320	80	156	103
RTOR Reduction (vph)	0	0	90	0	14	0	0	0	196	0	77	0
Lane Group Flow (vph)	311	1171	119	126	831	0	365	766	124	80	182	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.2	50.6	50.6	14.9	40.3		33.3	33.3	33.3	12.5	12.5	
Effective Green, g (s)	25.2	50.6	50.6	14.9	40.3		33.3	33.3	33.3	12.5	12.5	
Actuated g/C Ratio	0.19	0.39	0.39	0.12	0.31		0.26	0.26	0.26	0.10	0.10	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	344	1384	619	203	1554		414	866	407	171	321	
v/s Ratio Prot	c0.18	c0.33		0.07	0.17		0.23	c0.23		0.05	c0.05	
v/s Ratio Perm			0.08						0.08			
v/c Ratio	0.90	0.85	0.19	0.62	0.53		0.88	0.88	0.30	0.47	0.57	
Uniform Delay, d1	50.9	35.8	25.9	54.5	36.8		46.1	46.2	38.7	55.3	55.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	25.9	5.0	0.2	5.8	0.4		19.2	10.7	0.4	2.0	2.3	
Delay (s)	76.8	40.8	26.0	60.3	37.1		65.3	56.8	39.1	57.3	58.1	
Level of Service	E	D	C	E	D		E	E	D	E	E	
Approach Delay (s)		45.6			40.1			55.1			57.9	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	129.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

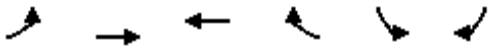
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	776	62	293	926	55	171	407	7	25	139	68
Future Volume (vph)	62	776	62	293	926	55	171	407	7	25	139	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3500		1770	3539	1583	1770	1858		1770	1770	
Flt Permitted	0.25	1.00		0.28	1.00	1.00	0.53	1.00		0.19	1.00	
Satd. Flow (perm)	460	3500		524	3539	1583	979	1858		349	1770	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	65	817	65	308	975	58	180	428	7	26	146	72
RTOR Reduction (vph)	0	7	0	0	0	23	0	1	0	0	22	0
Lane Group Flow (vph)	65	875	0	308	975	35	180	434	0	26	196	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	47.8	47.8		47.8	47.8	47.8	21.5	21.5		21.5	21.5	
Effective Green, g (s)	47.8	47.8		47.8	47.8	47.8	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.61	0.61		0.61	0.61	0.61	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	280	2136		319	2160	966	268	510		95	486	
v/s Ratio Prot		0.25			0.28			c0.23			0.11	
v/s Ratio Perm	0.14			c0.59		0.02	0.18			0.07		
v/c Ratio	0.23	0.41		0.97	0.45	0.04	0.67	0.85		0.27	0.40	
Uniform Delay, d1	6.9	7.9		14.5	8.2	6.1	25.3	26.9		22.3	23.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		40.8	0.2	0.0	12.7	16.3		7.0	2.5	
Delay (s)	7.3	8.0		55.2	8.4	6.1	37.9	43.2		29.3	25.7	
Level of Service	A	A		E	A	A	D	D		C	C	
Approach Delay (s)		8.0			19.0			41.6			26.0	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

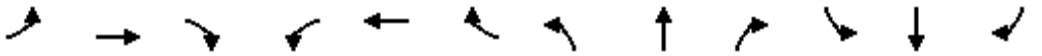
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	348	975	822	217	405	261
Future Volume (vph)	348	975	822	217	405	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	362	1016	856	226	422	272
RTOR Reduction (vph)	0	0	0	93	0	186
Lane Group Flow (vph)	363	1016	856	133	422	86
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	23.0	57.4	30.2	30.2	31.0	31.0
Effective Green, g (s)	23.0	57.4	30.2	30.2	31.0	31.0
Actuated g/C Ratio	0.24	0.59	0.31	0.31	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	417	2083	1096	490	562	503
v/s Ratio Prot	c0.21	0.29	c0.24		c0.24	
v/s Ratio Perm				0.08		0.05
v/c Ratio	0.87	0.49	0.78	0.27	0.75	0.17
Uniform Delay, d1	35.8	11.6	30.6	25.4	29.8	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.6	0.8	3.7	0.3	8.9	0.7
Delay (s)	53.5	12.4	34.3	25.7	38.7	24.7
Level of Service	D	B	C	C	D	C
Approach Delay (s)		23.2	32.5		33.2	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	13.3
Intersection Capacity Utilization	75.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

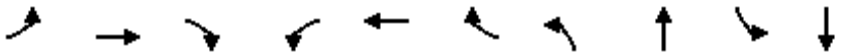


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	674	759	0	0	921	303	185	803	113	240	0	630
Future Volume (vph)	674	759	0	0	921	303	185	803	113	240	0	630
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	688	774	0	0	940	309	189	873	115	245	0	643
RTOR Reduction (vph)	0	0	0	0	0	194	0	0	63	0	0	432
Lane Group Flow (vph)	688	774	0	0	940	115	170	892	52	245	0	211
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Effective Green, g (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.38	0.38	0.38	0.13		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	632	665	595	224		915
v/s Ratio Prot	c0.20	0.22			c0.18		0.10	c0.50		c0.14		0.08
v/s Ratio Perm						0.07			0.03			
v/c Ratio	1.22	0.58			1.04	0.41	0.27	1.34	0.09	1.09		0.23
Uniform Delay, d1	54.4	32.1			53.4	47.3	28.1	40.5	26.2	56.8		31.7
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	116.1	1.8			39.7	4.3	0.2	163.6	0.1	87.4		0.1
Delay (s)	170.4	34.0			93.1	51.6	28.4	204.1	26.2	144.2		31.8
Level of Service	F	C			F	D	C	F	C	F		C
Approach Delay (s)		98.2			82.8			161.4			62.8	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM 2000 Control Delay	103.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues
1: Harder Rd & Mission Blvd

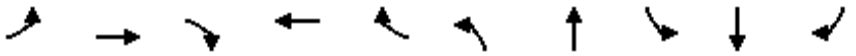


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	291	116	337	110	127	43	317	1801	65	1447
v/c Ratio	0.66	0.25	0.67	0.40	0.43	0.21	0.84	0.84	0.17	0.68
Control Delay	56.0	46.8	12.1	56.2	56.1	4.9	65.0	34.6	40.5	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	46.8	12.1	56.2	56.1	4.9	65.0	34.6	40.5	28.9
Queue Length 50th (ft)	108	41	0	41	48	0	230	431	40	309
Queue Length 95th (ft)	156	71	83	72	82	10	#408	543	84	396
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	734	756	603	734	756	398	378	2154	378	2142
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.15	0.56	0.15	0.17	0.11	0.84	0.84	0.17	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Mission Blvd & Tennyson Rd



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	296	3	216	21	11	328	1471	32	1042	299
v/c Ratio	0.67	0.01	0.55	0.23	0.07	0.72	0.42	0.32	0.35	0.28
Control Delay	66.5	51.3	12.1	69.8	0.8	68.2	12.1	71.7	17.2	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.5	51.3	12.1	69.8	0.8	68.2	12.1	71.7	17.2	2.8
Queue Length 50th (ft)	136	2	0	19	0	152	239	29	187	0
Queue Length 95th (ft)	179	12	74	48	0	197	335	64	267	50
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	447	141	201	701	3527	361	2996	1055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.01	0.48	0.15	0.05	0.47	0.42	0.09	0.35	0.28

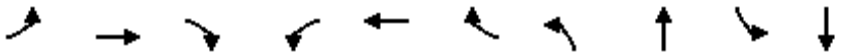
Intersection Summary

Queues
3: Mission Blvd & Valle Vista Ave

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	77	49	1923	1348
v/c Ratio	0.41	0.30	0.64	0.50
Control Delay	24.0	42.4	4.3	7.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.0	42.4	4.3	7.0
Queue Length 50th (ft)	12	26	150	171
Queue Length 95th (ft)	55	62	256	277
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	243	1047	2996	2678
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.32	0.05	0.64	0.50

Intersection Summary

Queues
4: Mission Blvd & Industrial Pkwy



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	510	414	225	11	121	142	278	1292	149	1186
v/c Ratio	0.83	0.36	0.37	0.11	0.32	0.38	0.84	0.71	0.69	0.61
Control Delay	43.0	9.8	5.3	36.1	32.2	3.6	57.3	23.0	49.2	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	9.8	5.3	36.1	32.2	3.6	57.3	23.0	49.2	18.5
Queue Length 50th (ft)	115	31	0	5	26	0	64	179	65	142
Queue Length 95th (ft)	#198	76	54	20	51	8	#131	238	#150	193
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	612	1573	792	97	1214	694	329	1815	218	1941
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.26	0.28	0.11	0.10	0.20	0.84	0.71	0.68	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	242	285	39	280	1559	18	932
v/c Ratio	0.83	0.50	0.12	0.50	0.50	0.06	0.44
Control Delay	53.6	6.8	19.2	31.8	9.8	27.4	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	6.8	19.2	31.8	9.8	27.4	15.7
Queue Length 50th (ft)	106	0	10	62	115	7	102
Queue Length 95th (ft)	#223	57	34	93	255	24	146
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	301	580	340	826	3134	378	2124
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.49	0.11	0.34	0.50	0.05	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

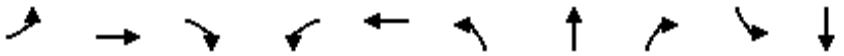
Queues
7: Huntwood Ave & Tennyson Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	120	776	97	201	733	40	156	364	235	76	198
v/c Ratio	0.57	0.54	0.14	0.70	0.88	0.05	0.51	0.66	0.37	0.45	0.36
Control Delay	52.4	25.5	5.1	52.5	40.2	3.3	37.4	38.2	5.7	40.4	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.4	25.5	5.1	52.5	40.2	3.3	37.4	38.2	5.7	40.4	28.6
Queue Length 50th (ft)	74	196	0	123	418	0	83	204	0	40	92
Queue Length 95th (ft)	132	283	34	195	#704	14	159	324	57	94	165
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	438	1579	760	438	831	737	303	554	636	168	543
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.49	0.13	0.46	0.88	0.05	0.51	0.66	0.37	0.45	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Huntwood Ave & Industrial Pkwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	311	1171	209	126	845	365	766	320	80	259
v/c Ratio	0.90	0.85	0.29	0.62	0.54	0.88	0.88	0.53	0.47	0.65
Control Delay	81.7	43.0	9.9	69.8	36.7	71.1	60.5	13.0	67.6	47.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	50.7	48.4	0.7	0.0	0.0
Total Delay	81.7	43.0	9.9	69.8	36.7	121.8	108.9	13.7	67.6	47.2
Queue Length 50th (ft)	271	462	32	107	207	342	360	38	67	77
Queue Length 95th (ft)	#495	614	94	179	256	#605	#537	140	128	131
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	345	1545	774	345	2190	414	866	603	207	464
Starvation Cap Reductn	0	0	0	0	0	93	215	92	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.76	0.27	0.37	0.39	1.14	1.18	0.63	0.39	0.56

Intersection Summary

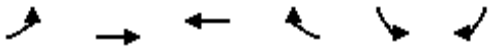
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Industrial Pkwy & Russ Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	882	308	975	58	180	435	26	218
v/c Ratio	0.23	0.41	0.97	0.45	0.06	0.67	0.85	0.27	0.43
Control Delay	9.4	8.4	61.7	9.0	2.0	40.5	45.4	32.1	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	8.4	61.7	9.0	2.0	40.5	45.4	32.1	23.7
Queue Length 50th (ft)	13	102	128	120	0	80	207	10	77
Queue Length 95th (ft)	34	138	#307	160	13	#172	#371	34	140
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	290	2221	330	2238	1022	269	511	95	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.40	0.93	0.44	0.06	0.67	0.85	0.27	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	363	1016	856	226	422	272
v/c Ratio	0.87	0.49	0.78	0.39	0.75	0.39
Control Delay	57.7	12.5	37.2	13.5	39.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	12.5	37.2	13.5	39.7	5.0
Queue Length 50th (ft)	214	177	261	42	236	0
Queue Length 95th (ft)	#358	226	337	106	#358	55
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	454	2114	1095	583	563	689
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.48	0.78	0.39	0.75	0.39

Intersection Summary

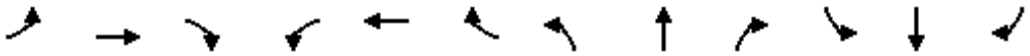
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	688	774	940	309	170	892	115	245	643
v/c Ratio	1.22	0.58	1.04	0.65	0.27	1.34	0.17	1.09	0.48
Control Delay	161.3	34.3	91.3	19.8	29.6	197.5	7.2	139.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	161.3	34.3	91.3	19.8	29.6	197.5	7.2	139.4	3.6
Queue Length 50th (ft)	~367	271	~311	54	104	~1031	7	~232	0
Queue Length 95th (ft)	#489	336	#404	157	165	#1296	47	#402	45
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	476	632	665	658	224	1343
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.22	0.58	1.04	0.65	0.27	1.34	0.17	1.09	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	286	107	331	148	93	29	252	950	79	23	1432	140
Future Volume (vph)	286	107	331	148	93	29	252	950	79	23	1432	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5027		1770	5017	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5027		1770	5017	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	321	120	372	166	104	33	283	1067	89	26	1609	157
RTOR Reduction (vph)	0	0	309	0	0	30	0	6	0	0	7	0
Lane Group Flow (vph)	321	120	63	166	104	3	283	1150	0	26	1759	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	16.2	15.0	15.0	11.1	9.9	9.9	23.4	50.1		25.1	51.8	
Effective Green, g (s)	16.2	15.0	15.0	11.1	9.9	9.9	23.4	50.1		25.1	51.8	
Actuated g/C Ratio	0.14	0.13	0.13	0.09	0.08	0.08	0.20	0.42		0.21	0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	470	448	200	322	296	132	350	2128		375	2196	
v/s Ratio Prot	c0.09	0.03		0.05	0.03		c0.16	0.23		0.01	c0.35	
v/s Ratio Perm			c0.04			0.00						
v/c Ratio	0.68	0.27	0.31	0.52	0.35	0.02	0.81	0.54		0.07	0.80	
Uniform Delay, d1	48.6	46.7	47.0	51.0	51.2	49.8	45.3	25.5		37.3	28.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	0.3	0.9	1.4	0.7	0.1	12.9	1.0		0.4	3.2	
Delay (s)	52.7	47.0	47.9	52.4	51.9	49.8	58.2	26.5		37.6	32.0	
Level of Service	D	D	D	D	D	D	E	C		D	C	
Approach Delay (s)		49.6			52.0			32.7			32.1	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	118.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	11	278	3	18	10	227	971	3	15	1552	227
Future Volume (vph)	317	11	278	3	18	10	227	971	3	15	1552	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1850	1583	3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1850	1583	3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	320	11	281	3	18	10	229	981	3	15	1568	229
RTOR Reduction (vph)	0	0	243	0	0	10	0	0	0	0	0	77
Lane Group Flow (vph)	320	11	38	0	21	0	229	984	0	15	1568	152
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	19.4	19.4	19.4		4.8	4.8	14.8	96.6		3.2	85.0	85.0
Effective Green, g (s)	19.4	19.4	19.4		4.8	4.8	14.8	96.6		3.2	85.0	85.0
Actuated g/C Ratio	0.14	0.14	0.14		0.03	0.03	0.10	0.68		0.02	0.60	0.60
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	469	254	216		62	53	357	3457		39	3043	947
v/s Ratio Prot	c0.09	0.01			c0.01		c0.07	0.19		0.01	c0.31	
v/s Ratio Perm			0.02			0.00						0.10
v/c Ratio	0.68	0.04	0.18		0.34	0.01	0.64	0.28		0.38	0.52	0.16
Uniform Delay, d1	58.4	53.2	54.2		67.0	66.3	61.1	9.0		68.4	16.5	12.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.1	0.1	0.4		3.2	0.0	3.9	0.2		6.2	0.6	0.4
Delay (s)	62.4	53.3	54.6		70.3	66.3	65.0	9.2		74.6	17.2	13.0
Level of Service	E	D	D		E	E	E	A		E	B	B
Approach Delay (s)		58.7			69.0			19.7			17.1	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	63.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	1	29	44	2	32	59	1203	25	18	1857	36
Future Volume (vph)	19	1	29	44	2	32	59	1203	25	18	1857	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.92			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1682			1778	1583	1770	3528		1770	3529	
Flt Permitted		0.85			0.69	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1459			1278	1583	1770	3528		1770	3529	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	20	1	30	46	2	33	61	1253	26	19	1934	38
RTOR Reduction (vph)	0	28	0	0	0	31	0	1	0	0	1	0
Lane Group Flow (vph)	0	23	0	0	48	2	61	1278	0	19	1971	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		7.0			7.0	7.0	7.5	110.9		2.3	105.7	
Effective Green, g (s)		7.0			7.0	7.0	7.5	110.9		2.3	105.7	
Actuated g/C Ratio		0.05			0.05	0.05	0.06	0.83		0.02	0.79	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		76			67	83	99	2937		30	2800	
v/s Ratio Prot							c0.03	0.36		0.01	c0.56	
v/s Ratio Perm		0.02			c0.04	0.00						
v/c Ratio		0.30			0.72	0.02	0.62	0.44		0.63	0.70	
Uniform Delay, d1		60.7			62.1	59.8	61.4	2.9		65.0	6.4	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			30.4	0.1	10.9	0.5		36.3	1.5	
Delay (s)		62.9			92.5	60.0	72.3	3.4		101.4	7.9	
Level of Service		E			F	E	E	A		F	A	
Approach Delay (s)		62.9			79.2			6.5			8.8	
Approach LOS		E			E			A			A	

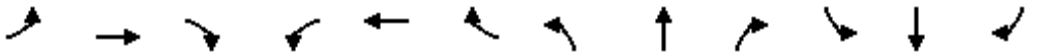
Intersection Summary			
HCM 2000 Control Delay	10.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	133.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	69.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	258	127	233	18	201	269	298	758	7	104	1205	597
Future Volume (vph)	258	127	233	18	201	269	298	758	7	104	1205	597
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.93	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3147	1441	1770	3539	1583	3433	5079		1770	4833	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3147	1441	1770	3539	1583	3433	5079		1770	4833	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	266	131	240	19	207	277	307	781	7	107	1242	615
RTOR Reduction (vph)	0	90	90	0	0	229	0	1	0	0	92	0
Lane Group Flow (vph)	266	161	30	19	207	48	307	787	0	107	1765	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	7.0	20.1	20.1	0.8	13.9	13.9	8.9	33.7		8.2	33.0	
Effective Green, g (s)	7.0	20.1	20.1	0.8	13.9	13.9	8.9	33.7		8.2	33.0	
Actuated g/C Ratio	0.09	0.25	0.25	0.01	0.17	0.17	0.11	0.42		0.10	0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	301	792	362	17	616	275	382	2144		181	1998	
v/s Ratio Prot	c0.08	0.05		0.01	c0.06		c0.09	0.16		0.06	c0.37	
v/s Ratio Perm			0.02			0.03						
v/c Ratio	0.88	0.20	0.08	1.12	0.34	0.18	0.80	0.37		0.59	0.88	
Uniform Delay, d1	36.0	23.5	22.8	39.5	28.9	28.1	34.6	15.8		34.2	21.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.9	0.1	0.1	258.7	0.3	0.3	11.6	0.5		5.1	6.1	
Delay (s)	60.9	23.7	22.9	298.2	29.2	28.4	46.2	16.2		39.3	27.7	
Level of Service	E	C	C	F	C	C	D	B		D	C	
Approach Delay (s)		39.1			38.9			24.6			28.4	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		

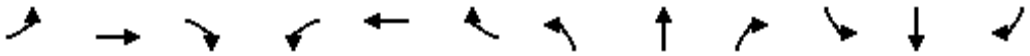
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	8	224	28	14	12	283	590	8	9	1540	109
Future Volume (vph)	137	8	224	28	14	12	283	590	8	9	1540	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.95	1.00		0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1779	1583		1761		3433	5076		1770	5035	
Flt Permitted		0.76	1.00		0.82		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1419	1583		1485		3433	5076		1770	5035	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	8	236	29	15	13	298	621	8	9	1621	115
RTOR Reduction (vph)	0	0	188	0	10	0	0	1	0	0	9	0
Lane Group Flow (vph)	0	152	48	0	47	0	298	628	0	9	1727	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		15.1	15.1		15.1		12.4	44.5		2.4	32.5	
Effective Green, g (s)		15.1	15.1		15.1		12.4	44.5		2.4	32.5	
Actuated g/C Ratio		0.20	0.20		0.20		0.17	0.59		0.03	0.43	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		286	319		299		569	3019		56	2187	
v/s Ratio Prot							c0.09	0.12		0.01	c0.34	
v/s Ratio Perm		c0.11	0.03		0.03							
v/c Ratio		0.53	0.15		0.16		0.52	0.21		0.16	0.79	
Uniform Delay, d1		26.7	24.6		24.6		28.5	7.0		35.2	18.2	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.9	0.2		0.2		0.9	0.2		1.3	3.0	
Delay (s)		28.6	24.8		24.8		29.4	7.2		36.6	21.2	
Level of Service		C	C		C		C	A		D	C	
Approach Delay (s)		26.3			24.8			14.3			21.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	2	9	51	0	67	4	335	22	30	290	10
Future Volume (vph)	12	2	9	51	0	67	4	335	22	30	290	10
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
Hourly flow rate (vph)	13	2	10	56	0	74	4	368	24	33	319	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	25	130	396	363
Volume Left (vph)	13	56	4	33
Volume Right (vph)	10	74	24	11
Hadj (s)	-0.10	-0.22	0.00	0.03
Departure Headway (s)	5.9	5.5	4.8	4.9
Degree Utilization, x	0.04	0.20	0.53	0.49
Capacity (veh/h)	499	573	725	710
Control Delay (s)	9.2	9.9	13.1	12.6
Approach Delay (s)	9.2	9.9	13.1	12.6
Approach LOS	A	A	B	B

Intersection Summary				
Delay	12.3			
Level of Service	B			
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	812	109	209	799	51	91	97	113	171	230	48
Future Volume (vph)	43	812	109	209	799	51	91	97	113	171	230	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1815	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.43	1.00	1.00	0.69	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	808	1863	1583	1290	1815	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	44	837	112	215	824	53	94	100	116	176	237	49
RTOR Reduction (vph)	0	0	70	0	0	27	0	0	80	0	6	0
Lane Group Flow (vph)	44	837	42	215	824	26	94	100	36	176	280	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	5.2	36.0	36.0	16.6	47.4	47.4	30.3	30.3	30.3	30.3	30.3	
Effective Green, g (s)	5.2	36.0	36.0	16.6	47.4	47.4	30.3	30.3	30.3	30.3	30.3	
Actuated g/C Ratio	0.05	0.37	0.37	0.17	0.49	0.49	0.31	0.31	0.31	0.31	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	95	1318	589	304	914	776	253	584	496	404	569	
v/s Ratio Prot	0.02	0.24		c0.12	c0.44			0.05			c0.15	
v/s Ratio Perm			0.03			0.02	0.12		0.02	0.14		
v/c Ratio	0.46	0.64	0.07	0.71	0.90	0.03	0.37	0.17	0.07	0.44	0.49	
Uniform Delay, d1	44.3	24.9	19.5	37.7	22.5	12.7	25.8	24.0	23.3	26.4	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.5	1.0	0.1	7.3	13.8	0.1	0.9	0.1	0.1	3.4	3.0	
Delay (s)	47.9	25.9	19.6	45.0	36.2	12.8	26.7	24.2	23.4	29.7	29.9	
Level of Service	D	C	B	D	D	B	C	C	C	C	C	
Approach Delay (s)		26.2			36.8			24.6			29.9	
Approach LOS		C			D			C			C	

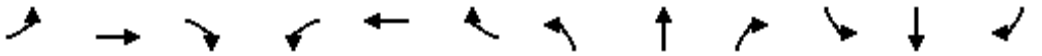
Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	96.6	Sum of lost time (s)	13.7
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	487	377	381	1075	35	209	112	112	85	412	103
Future Volume (vph)	73	487	377	381	1075	35	209	112	112	85	412	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5061		1610	3310	1583	1770	3433	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5061		1610	3310	1583	1770	3433	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	78	524	405	410	1156	38	225	120	120	91	443	111
RTOR Reduction (vph)	0	0	306	0	3	0	0	0	97	0	15	0
Lane Group Flow (vph)	78	524	99	410	1191	0	112	233	23	91	539	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	11.8	25.4	25.4	25.1	38.7		20.1	20.1	20.1	15.0	15.0	
Effective Green, g (s)	11.8	25.4	25.4	25.1	38.7		20.1	20.1	20.1	15.0	15.0	
Actuated g/C Ratio	0.11	0.25	0.25	0.24	0.37		0.19	0.19	0.19	0.14	0.14	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	201	867	388	428	1890		312	642	307	256	497	
v/s Ratio Prot	0.04	0.15		c0.23	c0.24		0.07	c0.07		0.05	c0.16	
v/s Ratio Perm			0.06						0.01			
v/c Ratio	0.39	0.60	0.26	0.96	0.63		0.36	0.36	0.08	0.36	1.09	
Uniform Delay, d1	42.6	34.6	31.5	38.7	26.6		36.2	36.2	34.2	39.9	44.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.2	0.4	32.5	0.7		0.7	0.4	0.1	0.9	65.5	
Delay (s)	43.8	35.8	31.8	71.2	27.3		36.9	36.5	34.3	40.8	109.8	
Level of Service	D	D	C	E	C		D	D	C	D	F	
Approach Delay (s)		34.9			38.5			36.0			100.0	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	103.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		

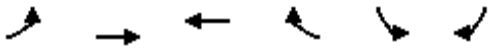
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	649	74	369	1023	31	39	76	7	42	349	108
Future Volume (vph)	27	649	74	369	1023	31	39	76	7	42	349	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3485		1770	3539	1583	1770	1840		1770	1797	
Flt Permitted	0.21	1.00		0.33	1.00	1.00	0.19	1.00		0.70	1.00	
Satd. Flow (perm)	399	3485		618	3539	1583	347	1840		1305	1797	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	683	78	388	1077	33	41	80	7	44	367	114
RTOR Reduction (vph)	0	11	0	0	0	13	0	4	0	0	14	0
Lane Group Flow (vph)	28	750	0	388	1077	20	41	83	0	44	467	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	2156		382	2189	979	93	494		350	482	
v/s Ratio Prot		0.22			0.30			0.05			c0.26	
v/s Ratio Perm	0.07			c0.63		0.01	0.12			0.03		
v/c Ratio	0.11	0.35		1.02	0.49	0.02	0.44	0.17		0.13	0.97	
Uniform Delay, d1	6.3	7.4		15.2	8.4	5.9	24.3	22.4		22.1	28.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	0.1		50.1	0.2	0.0	14.4	0.7		0.7	34.0	
Delay (s)	6.5	7.5		65.3	8.5	5.9	38.7	23.1		22.9	62.9	
Level of Service	A	A		E	A	A	D	C		C	E	
Approach Delay (s)		7.5			23.2			28.1			59.6	
Approach LOS		A			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		

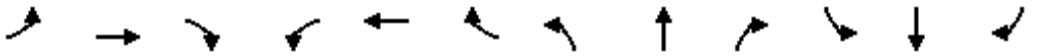
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	148	586	993	498	291	378
Future Volume (vph)	148	586	993	498	291	378
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	154	610	1034	519	303	394
RTOR Reduction (vph)	0	0	0	155	0	267
Lane Group Flow (vph)	154	610	1034	364	303	127
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	13.6	56.0	38.2	38.2	31.0	31.0
Effective Green, g (s)	13.6	56.0	38.2	38.2	31.0	31.0
Actuated g/C Ratio	0.14	0.58	0.40	0.40	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	250	2062	1406	629	570	510
v/s Ratio Prot	c0.09	0.17	c0.29		c0.17	
v/s Ratio Perm				0.23		0.08
v/c Ratio	0.62	0.30	0.74	0.58	0.53	0.25
Uniform Delay, d1	38.8	10.1	24.6	22.6	26.6	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5	0.4	2.0	1.3	3.5	1.2
Delay (s)	43.3	10.5	26.7	23.9	30.1	25.1
Level of Service	D	B	C	C	C	C
Approach Delay (s)		17.1	25.8		27.3	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	13.3
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	712	0	0	864	135	529	459	322	306	0	870
Future Volume (vph)	265	712	0	0	864	135	529	459	322	306	0	870
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1761	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1761	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	270	727	0	0	882	138	540	499	329	312	0	888
RTOR Reduction (vph)	0	0	0	0	0	110	0	0	72	0	0	100
Lane Group Flow (vph)	270	727	0	0	882	28	486	553	257	312	0	788
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	40.3	40.3	40.3	23.7		40.3
Effective Green, g (s)	11.7	40.6			24.2	24.2	40.3	40.3	40.3	23.7		40.3
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.34	0.34	0.34	0.20		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	564	591	531	349		935
v/s Ratio Prot	0.08	0.21			c0.17		0.29	c0.31		0.18		c0.28
v/s Ratio Perm						0.02			0.16			
v/c Ratio	0.81	0.61			0.86	0.09	0.86	0.94	0.48	0.89		0.84
Uniform Delay, d1	53.1	33.1			46.3	38.9	37.2	38.6	31.6	46.9		36.9
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	13.4	2.3			9.4	0.5	12.8	22.2	0.7	23.9		7.0
Delay (s)	66.4	35.4			55.7	39.5	50.0	60.8	32.3	70.8		43.9
Level of Service	E	D			E	D	D	E	C	E		D
Approach Delay (s)		43.8			53.5			50.1			50.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	49.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		

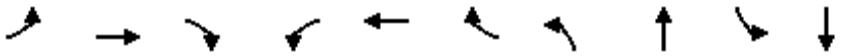
c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	14	15	0	5	26	0
Future Volume (Veh/h)	14	15	0	5	26	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	16	0	5	28	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			31		28	23
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			31		28	23
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1582		987	1054

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	31	5	28
Volume Left	0	0	28
Volume Right	16	0	0
cSH	1700	1700	987
Volume to Capacity	0.02	0.00	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

Queues
1: Harder Rd & Mission Blvd

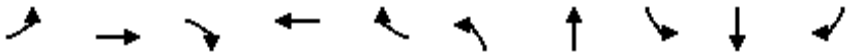


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	321	120	372	166	104	33	283	1156	26	1766
v/c Ratio	0.68	0.27	0.73	0.52	0.35	0.16	0.81	0.54	0.07	0.80
Control Delay	56.6	48.3	15.4	57.4	55.1	1.7	64.4	27.0	40.2	33.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	48.3	15.4	57.4	55.1	1.7	64.4	27.0	40.2	33.1
Queue Length 50th (ft)	120	44	12	62	40	0	201	230	16	419
Queue Length 95th (ft)	175	74	106	102	71	0	#364	316	43	556
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	727	749	614	727	749	396	375	2134	375	2204
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.16	0.61	0.23	0.14	0.08	0.75	0.54	0.07	0.80

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Mission Blvd & Tennyson Rd



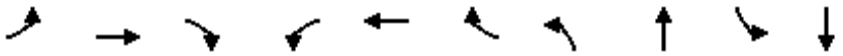
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	320	11	281	21	10	229	984	15	1568	229
v/c Ratio	0.68	0.04	0.61	0.22	0.06	0.64	0.27	0.17	0.51	0.22
Control Delay	65.8	51.3	11.8	69.7	0.7	69.2	9.5	68.9	18.1	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	51.3	11.8	69.7	0.7	69.2	9.5	68.9	18.1	4.1
Queue Length 50th (ft)	147	9	0	19	0	106	106	14	306	14
Queue Length 95th (ft)	192	27	84	48	0	147	197	38	418	61
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	501	143	201	701	3602	361	3101	1040
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.04	0.56	0.15	0.05	0.33	0.27	0.04	0.51	0.22

Intersection Summary

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	51	48	33	61	1279	19	1972
v/c Ratio	0.42	0.60	0.23	0.51	0.42	0.23	0.69
Control Delay	42.0	89.4	11.2	74.4	3.4	68.4	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	89.4	11.2	74.4	3.4	68.4	8.9
Queue Length 50th (ft)	17	41	0	51	87	16	423
Queue Length 95th (ft)	61	#95	21	100	192	43	502
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	129	88	155	136	3042	81	2859
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.55	0.21	0.45	0.42	0.23	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	266	251	120	19	207	277	307	788	107	1857
v/c Ratio	0.84	0.27	0.23	0.20	0.42	0.60	0.85	0.35	0.48	0.84
Control Delay	58.9	12.7	2.4	40.9	32.1	10.1	56.5	15.9	38.5	22.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.9	12.7	2.4	40.9	32.1	10.1	56.5	15.9	38.5	22.5
Queue Length 50th (ft)	64	25	0	9	47	0	74	90	47	253
Queue Length 95th (ft)	#137	61	15	30	78	62	#152	141	97	#362
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	317	1241	648	93	1171	709	363	2265	280	2198
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.20	0.19	0.20	0.18	0.39	0.85	0.35	0.38	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	152	236	57	298	629	9	1736
v/c Ratio	0.53	0.46	0.18	0.53	0.20	0.03	0.79
Control Delay	33.8	7.0	21.4	31.9	7.1	27.0	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.8	7.0	21.4	31.9	7.1	27.0	22.4
Queue Length 50th (ft)	65	0	17	66	31	4	230
Queue Length 95th (ft)	117	53	45	98	89	16	#375
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	322	542	347	826	3219	378	2197
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.44	0.16	0.36	0.20	0.02	0.79

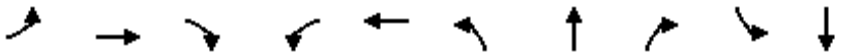
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	44	837	112	215	824	53	94	100	116	176	286
v/c Ratio	0.30	0.66	0.17	0.69	0.89	0.06	0.36	0.17	0.20	0.43	0.49
Control Delay	48.6	28.8	5.0	49.5	35.9	4.0	33.3	27.0	6.6	32.0	30.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.6	28.8	5.0	49.5	35.9	4.0	33.3	27.0	6.6	32.0	30.7
Queue Length 50th (ft)	26	217	0	126	467	0	45	44	0	86	138
Queue Length 95th (ft)	66	318	36	215	#762	19	110	101	43	178	261
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	470	1695	816	470	929	817	258	594	584	411	585
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.49	0.14	0.46	0.89	0.06	0.36	0.17	0.20	0.43	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	78	524	405	410	1194	112	233	120	91	554
v/c Ratio	0.30	0.62	0.59	0.95	0.63	0.36	0.36	0.30	0.35	1.07
Control Delay	44.5	38.1	6.9	72.5	28.7	41.1	38.7	9.3	45.5	101.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.5	38.1	6.9	72.5	28.7	41.1	38.7	9.3	45.5	101.7
Queue Length 50th (ft)	46	162	0	264	245	70	73	0	54	~206
Queue Length 95th (ft)	99	215	72	#510	293	140	123	50	112	#358
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	432	1935	1049	432	2769	518	1066	591	259	517
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.27	0.39	0.95	0.43	0.22	0.22	0.20	0.35	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

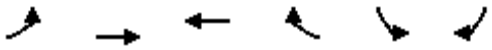
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	761	388	1077	33	41	87	44	481
v/c Ratio	0.11	0.35	1.02	0.49	0.03	0.45	0.17	0.13	0.97
Control Delay	7.7	7.7	69.7	9.3	2.3	42.2	22.3	23.4	63.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.7	7.7	69.7	9.3	2.3	42.2	22.3	23.4	63.8
Queue Length 50th (ft)	5	83	~185	138	0	17	31	17	229
Queue Length 95th (ft)	16	114	#374	183	9	#58	67	42	#422
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	246	2168	382	2189	992	92	498	350	496
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.35	1.02	0.49	0.03	0.45	0.17	0.13	0.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	154	610	1034	519	303	394
v/c Ratio	0.62	0.30	0.74	0.66	0.53	0.51
Control Delay	48.8	10.6	29.4	16.9	30.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	10.6	29.4	16.9	30.7	5.1
Queue Length 50th (ft)	90	92	277	124	150	0
Queue Length 95th (ft)	145	123	#390	267	233	64
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	460	2143	1405	784	570	777
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.28	0.74	0.66	0.53	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	270	727	882	138	486	553	329	312	888
v/c Ratio	0.81	0.61	0.86	0.32	0.86	0.94	0.55	0.89	0.86
Control Delay	72.1	35.7	56.0	8.7	53.8	63.4	24.8	75.3	40.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.1	35.7	56.0	8.7	53.8	63.4	24.8	75.3	40.8
Queue Length 50th (ft)	107	245	243	0	365	431	135	239	313
Queue Length 95th (ft)	#173	311	#300	54	#561	#660	229	#409	#438
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	429	572	600	611	349	1032
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.61	0.86	0.32	0.85	0.92	0.54	0.89	0.86

Intersection Summary

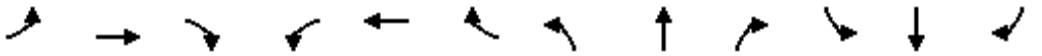
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis
1: Harder Rd & Mission Blvd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	259	103	305	101	113	38	286	1493	126	58	1128	179
Future Volume (vph)	259	103	305	101	113	38	286	1493	126	58	1128	179
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5026		1770	4981	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5026		1770	4981	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	291	116	343	113	127	43	321	1678	142	65	1267	201
RTOR Reduction (vph)	0	0	298	0	0	39	0	6	0	0	13	0
Lane Group Flow (vph)	291	116	45	113	127	4	321	1814	0	65	1455	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	15.2	15.5	15.5	9.5	9.8	9.8	25.0	50.1		25.0	50.1	
Effective Green, g (s)	15.2	15.5	15.5	9.5	9.8	9.8	25.0	50.1		25.0	50.1	
Actuated g/C Ratio	0.13	0.13	0.13	0.08	0.08	0.08	0.21	0.43		0.21	0.43	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	445	468	209	278	296	132	377	2150		377	2131	
v/s Ratio Prot	c0.08	0.03		0.03	c0.04		c0.18	c0.36		0.04	0.29	
v/s Ratio Perm			0.03			0.00						
v/c Ratio	0.65	0.25	0.22	0.41	0.43	0.03	0.85	0.84		0.17	0.68	
Uniform Delay, d1	48.4	45.6	45.4	51.1	51.0	49.3	44.3	30.0		37.6	27.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.3	0.5	1.0	1.0	0.1	16.7	4.3		1.0	1.8	
Delay (s)	51.9	45.8	45.9	52.1	52.0	49.4	60.9	34.2		38.6	28.9	
Level of Service	D	D	D	D	D	D	E	C		D	C	
Approach Delay (s)		48.2			51.6			38.2			29.3	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	117.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	18	228	9	24	19	336	1468	1	42	1050	296
Future Volume (vph)	293	18	228	9	24	19	336	1468	1	42	1050	296
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1838	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1838	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	296	18	230	9	24	19	339	1483	1	42	1061	299
RTOR Reduction (vph)	0	0	200	0	0	18	0	0	0	0	0	132
Lane Group Flow (vph)	296	18	30	0	33	1	339	1484	0	42	1061	167
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	18.4	18.4	18.4		6.9	6.9	19.3	91.0		7.7	79.4	79.4
Effective Green, g (s)	18.4	18.4	18.4		6.9	6.9	19.3	91.0		7.7	79.4	79.4
Actuated g/C Ratio	0.13	0.13	0.13		0.05	0.05	0.14	0.64		0.05	0.56	0.56
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	444	241	205		89	76	466	3258		95	2843	885
v/s Ratio Prot	c0.09	0.01			c0.02		c0.10	c0.29		0.02	0.21	
v/s Ratio Perm			0.02			0.00						0.11
v/c Ratio	0.67	0.07	0.15		0.37	0.01	0.73	0.46		0.44	0.37	0.19
Uniform Delay, d1	58.9	54.3	54.8		65.4	64.3	58.8	12.9		65.1	17.4	15.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.8	0.1	0.3		2.6	0.1	5.6	0.5		3.3	0.4	0.5
Delay (s)	62.6	54.5	55.2		68.0	64.4	64.4	13.4		68.3	17.8	15.9
Level of Service	E	D	E		E	E	E	B		E	B	B
Approach Delay (s)		59.2			66.7			22.9			18.9	
Approach LOS		E			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	27.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	2	52	33	2	26	47	1846	43	33	1254	39
Future Volume (vph)	22	2	52	33	2	26	47	1846	43	33	1254	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.91			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.99			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1667			1779	1583	1770	3527		1770	3523	
Flt Permitted		0.89			0.50	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1503			929	1583	1770	3527		1770	3523	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	23	2	54	34	2	27	49	1923	45	34	1306	41
RTOR Reduction (vph)	0	51	0	0	0	25	0	1	0	0	1	0
Lane Group Flow (vph)	0	28	0	0	36	2	49	1967	0	34	1346	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		7.8			7.8	7.8	6.7	105.2		5.0	103.5	
Effective Green, g (s)		7.8			7.8	7.8	6.7	105.2		5.0	103.5	
Actuated g/C Ratio		0.06			0.06	0.06	0.05	0.80		0.04	0.79	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		89			55	94	90	2832		67	2783	
v/s Ratio Prot							c0.03	c0.56		0.02	0.38	
v/s Ratio Perm		0.02			c0.04	0.00						
v/c Ratio		0.32			0.65	0.02	0.54	0.69		0.51	0.48	
Uniform Delay, d1		59.0			60.3	58.0	60.7	5.7		61.8	4.7	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1			24.6	0.1	6.6	1.4		5.9	0.6	
Delay (s)		61.1			84.9	58.1	67.2	7.2		67.7	5.3	
Level of Service		E			F	E	E	A		E	A	
Approach Delay (s)		61.1			73.4			8.6			6.8	
Approach LOS		E			E			A			A	

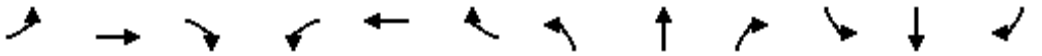
Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	131.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	518	182	437	11	117	138	270	1257	17	145	918	265
Future Volume (vph)	518	182	437	11	117	138	270	1257	17	145	918	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.92	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3113	1441	1770	3539	1583	3433	5075		1770	4914	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3113	1441	1770	3539	1583	3433	5075		1770	4914	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	534	188	451	11	121	142	278	1296	18	149	946	273
RTOR Reduction (vph)	0	157	156	0	0	121	0	1	0	0	53	0
Lane Group Flow (vph)	534	257	69	11	121	21	278	1313	0	149	1166	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	13.0	23.3	23.3	0.8	11.1	11.1	7.0	26.0		9.0	28.0	
Effective Green, g (s)	13.0	23.3	23.3	0.8	11.1	11.1	7.0	26.0		9.0	28.0	
Actuated g/C Ratio	0.17	0.31	0.31	0.01	0.15	0.15	0.09	0.34		0.12	0.37	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	586	953	441	18	516	230	315	1733		209	1808	
v/s Ratio Prot	c0.16	c0.08		0.01	0.03		0.08	c0.26		0.08	c0.24	
v/s Ratio Perm			0.05			0.01						
v/c Ratio	0.91	0.27	0.16	0.61	0.23	0.09	0.88	0.76		0.71	0.64	
Uniform Delay, d1	31.0	20.0	19.2	37.5	28.7	28.1	34.1	22.2		32.3	19.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.5	0.2	0.2	48.7	0.2	0.2	23.9	3.2		10.9	1.8	
Delay (s)	49.4	20.1	19.4	86.2	29.0	28.3	58.0	25.4		43.2	21.7	
Level of Service	D	C	B	F	C	C	E	C		D	C	
Approach Delay (s)		33.3			30.9			31.1			24.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

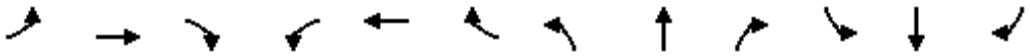
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	16	271	19	8	10	266	1474	21	17	771	126
Future Volume (vph)	215	16	271	19	8	10	266	1474	21	17	771	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1780	1583		1747		3433	5075		1770	4978	
Flt Permitted		0.71	1.00		0.82		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1327	1583		1462		3433	5075		1770	4978	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	226	17	285	20	8	11	280	1552	22	18	812	133
RTOR Reduction (vph)	0	0	223	0	9	0	0	1	0	0	26	0
Lane Group Flow (vph)	0	243	62	0	30	0	280	1573	0	18	919	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		12.1	43.2		2.4	31.5	
Effective Green, g (s)		16.4	16.4		16.4		12.1	43.2		2.4	31.5	
Actuated g/C Ratio		0.22	0.22		0.22		0.16	0.58		0.03	0.42	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		290	347		320		555	2931		56	2096	
v/s Ratio Prot							c0.08	c0.31		0.01	0.18	
v/s Ratio Perm		c0.18	0.04		0.02							
v/c Ratio		0.84	0.18		0.10		0.50	0.54		0.32	0.44	
Uniform Delay, d1		27.9	23.7		23.3		28.6	9.7		35.4	15.4	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		18.6	0.3		0.1		0.7	0.7		3.3	0.7	
Delay (s)		46.5	24.0		23.4		29.3	10.4		38.7	16.0	
Level of Service		D	C		C		C	B		D	B	
Approach Delay (s)		34.4			23.4			13.2			16.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	9	8	10	38	4	33	19	229	36	60	368	10
Future Volume (vph)	9	8	10	38	4	33	19	229	36	60	368	10
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
Hourly flow rate (vph)	10	9	11	42	4	36	21	252	40	66	404	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	30	82	313	481
Volume Left (vph)	10	42	21	66
Volume Right (vph)	11	36	40	11
Hadj (s)	-0.12	-0.13	-0.03	0.05
Departure Headway (s)	5.8	5.7	4.8	4.7
Degree Utilization, x	0.05	0.13	0.42	0.62
Capacity (veh/h)	514	551	728	754
Control Delay (s)	9.1	9.5	11.1	15.1
Approach Delay (s)	9.1	9.5	11.1	15.1
Approach LOS	A	A	B	C

Intersection Summary				
Delay	13.0			
Level of Service	B			
Intersection Capacity Utilization	52.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	778	94	196	730	42	151	353	229	78	141	51
Future Volume (vph)	116	778	94	196	730	42	151	353	229	78	141	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1788	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.55	1.00	1.00	0.30	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	1018	1863	1583	562	1788	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	120	802	97	202	753	43	156	364	236	80	145	53
RTOR Reduction (vph)	0	0	58	0	0	24	0	0	166	0	11	0
Lane Group Flow (vph)	120	802	39	202	753	19	156	364	70	80	187	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	12.2	41.0	41.0	16.6	45.4	45.4	30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	12.2	41.0	41.0	16.6	45.4	45.4	30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.12	0.40	0.40	0.16	0.45	0.45	0.30	0.30	0.30	0.30	0.30	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	213	1432	640	290	834	709	301	551	468	166	529	
v/s Ratio Prot	0.07	0.23		c0.11	c0.40			c0.20			0.10	
v/s Ratio Perm			0.02			0.01	0.15		0.04	0.14		
v/c Ratio	0.56	0.56	0.06	0.70	0.90	0.03	0.52	0.66	0.15	0.48	0.35	
Uniform Delay, d1	42.0	23.2	18.4	40.0	25.9	15.6	29.6	31.2	26.3	29.3	28.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.4	0.5	0.0	7.1	15.0	0.1	1.5	3.0	0.1	9.7	1.8	
Delay (s)	45.4	23.7	18.4	47.1	40.9	15.7	31.1	34.2	26.4	39.0	29.9	
Level of Service	D	C	B	D	D	B	C	C	C	D	C	
Approach Delay (s)		25.8			41.0			31.1			32.5	
Approach LOS		C			D			C			C	

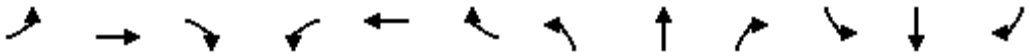
Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	13.7
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	289	1103	194	121	696	101	446	605	303	75	145	96
Future Volume (vph)	289	1103	194	121	696	101	446	605	303	75	145	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4988		1610	3365	1583	1770	3328	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4988		1610	3365	1583	1770	3328	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	311	1186	209	130	748	109	480	651	326	81	156	103
RTOR Reduction (vph)	0	0	89	0	14	0	0	0	200	0	77	0
Lane Group Flow (vph)	311	1186	120	130	843	0	365	766	126	81	182	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.2	51.0	51.0	15.2	41.0		33.3	33.3	33.3	12.5	12.5	
Effective Green, g (s)	25.2	51.0	51.0	15.2	41.0		33.3	33.3	33.3	12.5	12.5	
Actuated g/C Ratio	0.19	0.39	0.39	0.12	0.32		0.26	0.26	0.26	0.10	0.10	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	343	1388	621	206	1573		412	861	405	170	320	
v/s Ratio Prot	c0.18	c0.34		0.07	0.17		0.23	c0.23		0.05	c0.05	
v/s Ratio Perm			0.08						0.08			
v/c Ratio	0.91	0.85	0.19	0.63	0.54		0.89	0.89	0.31	0.48	0.57	
Uniform Delay, d1	51.3	36.1	26.0	54.7	36.7		46.5	46.6	39.1	55.7	56.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	26.3	5.3	0.2	6.2	0.4		19.8	11.1	0.4	2.1	2.3	
Delay (s)	77.6	41.5	26.1	60.9	37.0		66.3	57.7	39.5	57.8	58.5	
Level of Service	E	D	C	E	D		E	E	D	E	E	
Approach Delay (s)		46.2			40.2			55.8			58.3	
Approach LOS		D			D			E			E	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		

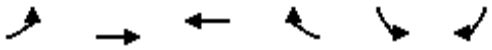
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	779	62	298	932	55	171	407	7	25	139	68
Future Volume (vph)	62	779	62	298	932	55	171	407	7	25	139	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3500		1770	3539	1583	1770	1858		1770	1770	
Flt Permitted	0.25	1.00		0.28	1.00	1.00	0.52	1.00		0.19	1.00	
Satd. Flow (perm)	458	3500		524	3539	1583	967	1858		347	1770	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	65	820	65	314	981	58	180	428	7	26	146	72
RTOR Reduction (vph)	0	7	0	0	0	22	0	1	0	0	22	0
Lane Group Flow (vph)	65	878	0	314	981	36	180	434	0	26	196	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.4	49.4		49.4	49.4	49.4	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.4	49.4		49.4	49.4	49.4	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	283	2163		323	2188	978	260	499		93	476	
v/s Ratio Prot		0.25			0.28			c0.23			0.11	
v/s Ratio Perm	0.14			c0.60		0.02	0.19			0.08		
v/c Ratio	0.23	0.41		0.97	0.45	0.04	0.69	0.87		0.28	0.41	
Uniform Delay, d1	6.8	7.8		14.6	8.1	6.0	26.2	27.9		23.1	24.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	0.1		42.3	0.1	0.0	14.1	18.4		7.3	2.6	
Delay (s)	7.2	7.9		56.9	8.2	6.0	40.4	46.3		30.4	26.6	
Level of Service	A	A		E	A	A	D	D		C	C	
Approach Delay (s)		7.8			19.4			44.5			27.0	
Approach LOS		A			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	21.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	79.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	81.0%	ICU Level of Service	D
Analysis Period (min)	15		

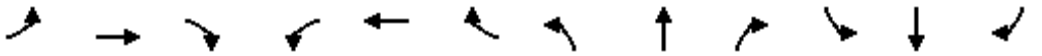
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	348	977	824	221	405	261
Future Volume (vph)	348	977	824	221	405	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	362	1018	858	230	422	272
RTOR Reduction (vph)	0	0	0	95	0	186
Lane Group Flow (vph)	363	1018	858	135	422	86
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	23.0	57.4	30.2	30.2	31.0	31.0
Effective Green, g (s)	23.0	57.4	30.2	30.2	31.0	31.0
Actuated g/C Ratio	0.24	0.59	0.31	0.31	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	417	2083	1096	490	562	503
v/s Ratio Prot	c0.21	0.29	c0.24		c0.24	
v/s Ratio Perm				0.09		0.05
v/c Ratio	0.87	0.49	0.78	0.28	0.75	0.17
Uniform Delay, d1	35.8	11.6	30.7	25.4	29.8	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.6	0.8	3.7	0.3	8.9	0.7
Delay (s)	53.5	12.4	34.4	25.7	38.7	24.7
Level of Service	D	B	C	C	D	C
Approach Delay (s)		23.2	32.5		33.2	
Approach LOS		C	C		C	

Intersection Summary			
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	97.5	Sum of lost time (s)	13.3
Intersection Capacity Utilization	75.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	680	759	0	0	921	303	185	808	113	240	0	635
Future Volume (vph)	680	759	0	0	921	303	185	808	113	240	0	635
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	694	774	0	0	940	309	189	878	115	245	0	648
RTOR Reduction (vph)	0	0	0	0	0	193	0	0	63	0	0	435
Lane Group Flow (vph)	694	774	0	0	940	116	170	897	52	245	0	213
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Effective Green, g (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.38	0.38	0.38	0.13		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	632	665	595	224		915
v/s Ratio Prot	c0.20	0.22			c0.18		0.10	c0.51		c0.14		0.08
v/s Ratio Perm						0.07			0.03			
v/c Ratio	1.23	0.58			1.04	0.41	0.27	1.35	0.09	1.09		0.23
Uniform Delay, d1	54.4	32.1			53.4	47.3	28.1	40.5	26.2	56.8		31.7
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	120.5	1.8			39.7	4.4	0.2	166.8	0.1	87.4		0.1
Delay (s)	174.8	34.0			93.1	51.7	28.4	207.4	26.2	144.2		31.9
Level of Service	F	C			F	D	C	F	C	F		C
Approach Delay (s)		100.6			82.9			164.0			62.7	
Approach LOS		F			F			F			E	

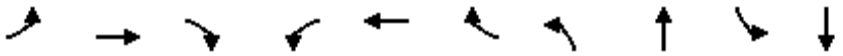
Intersection Summary			
HCM 2000 Control Delay	104.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	109.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	36	26	0	32	20	0
Future Volume (Veh/h)	36	26	0	32	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	39	28	0	35	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			67		88	53
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			67		88	53
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1535		913	1014

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	67	35	22
Volume Left	0	0	22
Volume Right	28	0	0
cSH	1700	1700	913
Volume to Capacity	0.04	0.02	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	13.5%	ICU Level of Service	A
Analysis Period (min)	15		

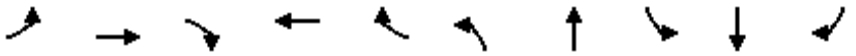


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	291	116	343	113	127	43	321	1820	65	1468
v/c Ratio	0.66	0.25	0.68	0.41	0.43	0.21	0.85	0.84	0.17	0.69
Control Delay	56.0	46.9	12.2	56.2	56.1	4.9	66.2	35.0	40.5	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	46.9	12.2	56.2	56.1	4.9	66.2	35.0	40.5	29.2
Queue Length 50th (ft)	108	41	0	42	48	0	234	437	40	316
Queue Length 95th (ft)	156	71	83	73	82	10	#414	550	84	404
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	734	756	608	734	756	398	378	2154	378	2142
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.15	0.56	0.15	0.17	0.11	0.85	0.84	0.17	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Mission Blvd & Tennyson Rd



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	296	18	230	33	19	339	1484	42	1061	299
v/c Ratio	0.67	0.07	0.57	0.32	0.11	0.73	0.45	0.38	0.37	0.29
Control Delay	65.9	52.6	12.0	71.5	1.3	68.0	14.7	73.0	19.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.9	52.6	12.0	71.5	1.3	68.0	14.7	73.0	19.2	3.0
Queue Length 50th (ft)	136	15	0	30	0	157	251	38	196	0
Queue Length 95th (ft)	178	38	76	66	0	203	356	78	282	52
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	458	142	201	701	3315	361	2871	1023
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.06	0.50	0.23	0.09	0.48	0.45	0.12	0.37	0.29

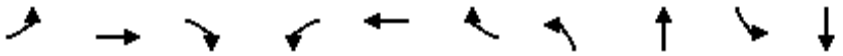
Intersection Summary

Queues
3: Mission Blvd & Valle Vista Ave

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	79	36	27	49	1968	34	1347
v/c Ratio	0.51	0.56	0.17	0.44	0.67	0.32	0.47
Control Delay	35.4	90.4	7.5	72.3	8.1	67.6	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.4	90.4	7.5	72.3	8.1	67.6	6.0
Queue Length 50th (ft)	21	30	0	41	402	28	205
Queue Length 95th (ft)	74	#70	12	85	519	65	255
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	178	79	180	124	2922	124	2847
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.46	0.15	0.40	0.67	0.27	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	534	414	225	11	121	142	278	1314	149	1219
v/c Ratio	0.87	0.36	0.37	0.11	0.32	0.38	0.84	0.72	0.69	0.63
Control Delay	46.7	9.8	5.3	36.1	32.2	3.6	57.3	23.2	49.2	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.7	9.8	5.3	36.1	32.2	3.6	57.3	23.2	49.2	18.7
Queue Length 50th (ft)	121	31	0	5	26	0	64	183	65	147
Queue Length 95th (ft)	#212	76	54	20	51	8	#131	243	#150	200
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	612	1573	792	97	1214	694	329	1815	218	1939
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.26	0.28	0.11	0.10	0.20	0.84	0.72	0.68	0.63

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	243	285	39	280	1574	18	945
v/c Ratio	0.84	0.50	0.12	0.50	0.50	0.06	0.45
Control Delay	54.0	6.8	19.2	31.8	9.9	27.4	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	6.8	19.2	31.8	9.9	27.4	15.8
Queue Length 50th (ft)	107	0	10	62	116	7	104
Queue Length 95th (ft)	#224	57	34	93	259	24	149
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	301	580	340	826	3133	378	2122
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.49	0.11	0.34	0.50	0.05	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

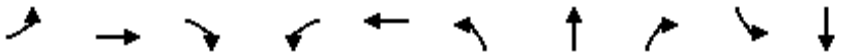
Queues
7: Huntwood Ave & Tennyson Rd

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	120	802	97	202	753	43	156	364	236	80	198
v/c Ratio	0.57	0.56	0.14	0.70	0.90	0.06	0.52	0.66	0.37	0.48	0.37
Control Delay	52.7	25.8	5.0	52.7	42.5	3.7	37.9	38.6	5.7	42.2	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.7	25.8	5.0	52.7	42.5	3.7	37.9	38.6	5.7	42.2	28.9
Queue Length 50th (ft)	74	205	0	124	437	0	83	204	0	42	92
Queue Length 95th (ft)	133	296	33	199	#735	16	163	332	58	101	168
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	437	1574	758	437	834	739	302	552	635	166	541
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.51	0.13	0.46	0.90	0.06	0.52	0.66	0.37	0.48	0.37

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Huntwood Ave & Industrial Pkwy



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	311	1186	209	130	857	365	766	326	81	259
v/c Ratio	0.91	0.86	0.29	0.63	0.54	0.89	0.89	0.54	0.48	0.66
Control Delay	82.9	43.7	10.2	70.1	36.6	72.1	61.4	13.1	68.2	47.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	50.4	48.2	0.8	0.0	0.0
Total Delay	82.9	43.7	10.2	70.1	36.6	122.5	109.6	13.9	68.2	47.5
Queue Length 50th (ft)	272	474	33	111	211	345	362	39	69	77
Queue Length 95th (ft)	#496	629	96	184	260	#606	#541	143	129	132
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	343	1536	769	343	2178	412	861	605	205	462
Starvation Cap Reductn	0	0	0	0	0	92	214	91	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.77	0.27	0.38	0.39	1.14	1.18	0.63	0.40	0.56

Intersection Summary

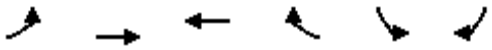
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: Industrial Pkwy & Russ Road

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	65	885	314	981	58	180	435	26	218
v/c Ratio	0.23	0.41	0.97	0.45	0.06	0.69	0.87	0.28	0.44
Control Delay	9.3	8.3	63.0	8.9	2.0	42.7	47.8	32.7	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.3	8.3	63.0	8.9	2.0	42.7	47.8	32.7	24.0
Queue Length 50th (ft)	13	103	134	121	0	81	207	10	77
Queue Length 95th (ft)	34	138	#314	161	13	#174	#371	34	140
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	283	2175	323	2192	1002	259	501	92	498
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.41	0.97	0.45	0.06	0.69	0.87	0.28	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	363	1018	858	230	422	272
v/c Ratio	0.87	0.49	0.78	0.39	0.75	0.39
Control Delay	57.7	12.6	37.3	13.6	39.7	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.7	12.6	37.3	13.6	39.7	5.0
Queue Length 50th (ft)	214	177	262	43	236	0
Queue Length 95th (ft)	#358	227	338	109	#358	55
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	454	2114	1095	584	563	689
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.48	0.78	0.39	0.75	0.39

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	694	774	940	309	170	897	115	245	648
v/c Ratio	1.23	0.58	1.04	0.65	0.27	1.35	0.17	1.09	0.48
Control Delay	165.3	34.3	91.3	19.9	29.6	200.6	7.2	139.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	165.3	34.3	91.3	19.9	29.6	200.6	7.2	139.4	3.6
Queue Length 50th (ft)	~372	271	~311	54	104	~1040	7	~232	0
Queue Length 95th (ft)	#495	336	#404	158	165	#1304	47	#402	44
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	475	632	665	658	224	1347
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.23	0.58	1.04	0.65	0.27	1.35	0.17	1.09	0.48

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX C

CUMULATIVE FUTURE VOLUME DATA

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
1 Mission Boulevard (SR-238)/Harder Road						
NBL	347	5	352	484	4	488
NBT	1,636	19	1,655	2,255	14	2,269
NBR	256	3	259	297	2	299
SBL	79	0	79	148	0	148
SBT	2,381	11	2,392	1,796	19	1,815
SBR	202	0	202	326	0	326
EBL	390	0	390	508	0	508
EBT	279	0	279	318	0	318
EBR	416	3	419	589	5	594
WBL	256	2	258	181	3	184
WBT	140	0	140	235	0	235
WBR	55	0	55	70	0	70
North Leg						
Approach	2,662	11	2,673	2,270	19	2,289
Departure	2,081	19	2,100	2,833	14	2,847
Total	4,743	30	4,773	5,103	33	5,136
South Leg						
Approach	2,239	27	2,266	3,036	20	3,056
Departure	3,053	16	3,069	2,566	27	2,593
Total	5,292	43	5,335	5,602	47	5,649
East Leg						
Approach	451	2	453	486	3	489
Departure	614	3	617	763	2	765
Total	1,065	5	1,070	1,249	5	1,254
West Leg						
Approach	1,085	3	1,088	1,415	5	1,420
Departure	689	5	694	1,045	4	1,049
Total	1,774	8	1,782	2,460	9	2,469
Total Approaches						
Approach	6,437	43	6,480	7,207	47	7,254
Departure	6,437	43	6,480	7,207	47	7,254
Total	12,874	86	12,960	14,414	94	14,508

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
2 Mission Boulevard (SR-238)/Tennyson Road						
NBL	352	15	367	526	11	537
NBT	1,750	18	1,768	2,366	13	2,379
NBR	5	0	5	2	0	2
SBL	15	6	21	63	10	73
SBT	2,551	10	2,561	1,860	18	1,878
SBR	358	0	358	487	0	487
EBL	475	0	475	491	0	491
EBT	3	9	12	6	15	21
EBR	384	8	392	392	14	406
WBL	24	0	24	14	0	14
WBT	15	16	31	18	12	30
WBR	0	10	10	16	8	24
North Leg						
Approach	2,924	16	2,940	2,410	28	2,438
Departure	2,225	28	2,253	2,873	21	2,894
Total	5,149	44	5,193	5,283	49	5,332
South Leg						
Approach	2,107	33	2,140	2,894	24	2,918
Departure	2,959	18	2,977	2,266	32	2,298
Total	5,066	51	5,117	5,160	56	5,216
East Leg						
Approach	39	26	65	48	20	68
Departure	23	15	38	71	25	96
Total	62	41	103	119	45	164
West Leg						
Approach	862	17	879	889	29	918
Departure	725	31	756	1,031	23	1,054
Total	1,587	48	1,635	1,920	52	1,972
Total Approaches						
Approach	5,932	92	6,024	6,241	101	6,342
Departure	5,932	92	6,024	6,241	101	6,342
Total	11,864	184	12,048	12,482	202	12,684

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
3 Mission Boulevard (SR-238)/Valle Vista Avenue - Project Driveway						
NBL	67	0	67	109	0	109
NBT	2,096	0	2,096	2,956	0	2,956
NBR	0	25	25	0	43	43
SBL	0	18	18	0	32	32
SBT	2,988	0	2,988	2,225	0	2,225
SBR	40	0	40	92	0	92
EBL	63	0	63	28	0	28
EBT	0	1	1	0	2	2
EBR	90	0	90	73	0	73
WBL	0	44	44	0	33	33
WBT	0	2	2	0	2	2
WBR	0	32	32	0	24	24
North Leg						
Approach	3,028	18	3,046	2,317	32	2,349
Departure	2,159	32	2,191	2,984	24	3,008
Total	5,187	50	5,237	5,301	56	5,357
South Leg						
Approach	2,163	25	2,188	3,065	43	3,108
Departure	3,078	44	3,122	2,298	33	2,331
Total	5,241	69	5,310	5,363	76	5,439
East Leg						
Approach	0	78	78	0	59	59
Departure	0	44	44	0	77	77
Total	0	122	122	0	136	136
West Leg						
Approach	153	1	154	101	2	103
Departure	107	2	109	201	2	203
Total	260	3	263	302	4	306
Total Approaches						
Approach	5,344	122	5,466	5,483	136	5,619
Departure	5,344	122	5,466	5,483	136	5,619
Total	10,688	244	10,932	10,966	272	11,238

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
4 Mission Boulevard (SR-238)/Industrial Parkway W						
NBL	663	0	663	672	0	672
NBT	1,459	12	1,471	2,239	21	2,260
NBR	11	0	11	23	0	23
SBL	114	0	114	153	0	153
SBT	2,075	21	2,096	1,661	16	1,677
SBR	867	23	890	474	17	491
EBL	408	13	421	682	23	705
EBT	174	0	174	191	0	191
EBR	512	0	512	797	0	797
WBL	25	0	25	14	0	14
WBT	241	0	241	154	0	154
WBR	284	0	284	145	0	145
North Leg						
Approach	3,056	44	3,100	2,288	33	2,321
Departure	2,151	25	2,176	3,066	44	3,110
Total	5,207	69	5,276	5,354	77	5,431
South Leg						
Approach	2,133	12	2,145	2,934	21	2,955
Departure	2,612	21	2,633	2,472	16	2,488
Total	4,745	33	4,778	5,406	37	5,443
East Leg						
Approach	550	0	550	313	0	313
Departure	299	0	299	367	0	367
Total	849	0	849	680	0	680
West Leg						
Approach	1,094	13	1,107	1,670	23	1,693
Departure	1,771	23	1,794	1,300	17	1,317
Total	2,865	36	2,901	2,970	40	3,010
Total Approaches						
Approach	6,833	69	6,902	7,205	77	7,282
Departure	6,833	69	6,902	7,205	77	7,282
Total	13,666	138	13,804	14,410	154	14,564

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
5 Mission Boulevard (SR-238)/Whipple Road						
NBL	454	0	454	378	0	378
NBT	1,397	8	1,405	2,860	14	2,874
NBR	38	0	38	46	0	46
SBL	26	0	26	31	0	31
SBT	2,726	15	2,741	1,730	11	1,741
SBR	113	1	114	150	1	151
EBL	170	1	171	247	1	248
EBT	20	0	20	21	0	21
EBR	337	0	337	430	0	430
WBL	69	0	69	50	0	50
WBT	19	0	19	11	0	11
WBR	25	0	25	19	0	19
North Leg						
Approach	2,865	16	2,881	1,911	12	1,923
Departure	1,592	9	1,601	3,126	15	3,141
Total	4,457	25	4,482	5,037	27	5,064
South Leg						
Approach	1,889	8	1,897	3,284	14	3,298
Departure	3,132	15	3,147	2,210	11	2,221
Total	5,021	23	5,044	5,494	25	5,519
East Leg						
Approach	113	0	113	80	0	80
Departure	84	0	84	98	0	98
Total	197	0	197	178	0	178
West Leg						
Approach	527	1	528	698	1	699
Departure	586	1	587	539	1	540
Total	1,113	2	1,115	1,237	2	1,239
Total Approaches						
Approach	5,394	25	5,419	5,973	27	6,000
Departure	5,394	25	5,419	5,973	27	6,000
Total	10,788	50	10,838	11,946	54	12,000

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
6 Dixon Street/Valle Vista Avenue						
NBL	5	0	5	21	0	21
NBT	595	0	595	641	0	641
NBR	74	1	75	57	2	59
SBL	81	0	81	66	0	66
SBT	668	0	668	615	0	615
SBR	11	0	11	11	0	11
EBL	13	0	13	11	0	11
EBT	3	0	3	8	0	8
EBR	11	0	11	11	0	11
WBL	71	2	73	91	2	93
WBT	0	0	0	4	0	4
WBR	70	0	70	92	0	92
North Leg						
Approach	760	0	760	692	0	692
Departure	678	0	678	744	0	744
Total	1,438	0	1,438	1,436	0	1,436
South Leg						
Approach	674	1	675	719	2	721
Departure	750	2	752	717	2	719
Total	1,424	3	1,427	1,436	4	1,440
East Leg						
Approach	141	2	143	187	2	189
Departure	158	1	159	131	2	133
Total	299	3	302	318	4	322
West Leg						
Approach	27	0	27	30	0	30
Departure	16	0	16	36	0	36
Total	43	0	43	66	0	66
Total Approaches						
Approach	1,602	3	1,605	1,628	4	1,632
Departure	1,602	3	1,605	1,628	4	1,632
Total	3,204	6	3,210	3,256	8	3,264

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
7 Huntwood Avenue/Tennyson Road						
NBL	199	0	199	200	0	200
NBT	209	0	209	446	0	446
NBR	253	1	254	452	1	453
SBL	212	2	214	124	4	128
SBT	296	0	296	227	0	227
SBR	58	0	58	57	0	57
EBL	52	0	52	121	0	121
EBT	1,017	14	1,031	1,229	25	1,254
EBR	143	0	143	147	0	147
WBL	359	1	360	411	1	412
WBT	1,256	25	1,281	1,044	19	1,063
WBR	75	4	79	55	3	58
North Leg						
Approach	566	2	568	408	4	412
Departure	336	4	340	622	3	625
Total	902	6	908	1,030	7	1,037
South Leg						
Approach	661	1	662	1,098	1	1,099
Departure	798	1	799	785	1	786
Total	1,459	2	1,461	1,883	2	1,885
East Leg						
Approach	1,690	30	1,720	1,510	23	1,533
Departure	1,482	17	1,499	1,805	30	1,835
Total	3,172	47	3,219	3,315	53	3,368
West Leg						
Approach	1,212	14	1,226	1,497	25	1,522
Departure	1,513	25	1,538	1,301	19	1,320
Total	2,725	39	2,764	2,798	44	2,842
Total Approaches						
Approach	4,129	47	4,176	4,513	53	4,566
Departure	4,129	47	4,176	4,513	53	4,566
Total	8,258	94	8,352	9,026	106	9,132

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
8 Huntwood Avenue/Industrial Parkway W						
NBL	257	0	257	611	0	611
NBT	188	0	188	857	0	857
NBR	128	3	131	476	5	481
SBL	146	1	147	138	1	139
SBT	635	0	635	234	0	234
SBR	188	0	188	154	0	154
EBL	143	0	143	378	0	378
EBT	658	8	666	1,607	14	1,621
EBR	457	0	457	247	0	247
WBL	524	5	529	183	4	187
WBT	1,746	15	1,761	1,068	11	1,079
WBR	76	1	77	161	1	162
North Leg						
Approach	969	1	970	526	1	527
Departure	407	1	408	1,396	1	1,397
Total	1,376	2	1,378	1,922	2	1,924
South Leg						
Approach	573	3	576	1,944	5	1,949
Departure	1,616	5	1,621	664	4	668
Total	2,189	8	2,197	2,608	9	2,617
East Leg						
Approach	2,346	21	2,367	1,412	16	1,428
Departure	932	12	944	2,221	20	2,241
Total	3,278	33	3,311	3,633	36	3,669
West Leg						
Approach	1,258	8	1,266	2,232	14	2,246
Departure	2,191	15	2,206	1,833	11	1,844
Total	3,449	23	3,472	4,065	25	4,090
Total Approaches						
Approach	5,146	33	5,179	6,114	36	6,150
Departure	5,146	33	5,179	6,114	36	6,150
Total	10,292	66	10,358	12,228	72	12,300

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
9 Ruus Road - Industrial Parkway SW/Industrial Parkway W						
NBL	664	0	664	944	0	944
NBT	225	0	225	806	0	806
NBR	105	0	105	41	0	41
SBL	44	0	44	30	0	30
SBT	703	0	703	342	0	342
SBR	113	0	113	77	0	77
EBL	28	0	28	65	0	65
EBT	884	2	886	1,397	3	1,400
EBR	238	0	238	232	0	232
WBL	945	6	951	754	5	759
WBT	1,277	8	1,285	1,096	6	1,102
WBR	33	0	33	58	0	58
North Leg						
Approach	860	0	860	449	0	449
Departure	286	0	286	929	0	929
Total	1,146	0	1,146	1,378	0	1,378
South Leg						
Approach	994	0	994	1,791	0	1,791
Departure	1,886	6	1,892	1,328	5	1,333
Total	2,880	6	2,886	3,119	5	3,124
East Leg						
Approach	2,255	14	2,269	1,908	11	1,919
Departure	1,033	2	1,035	1,468	3	1,471
Total	3,288	16	3,304	3,376	14	3,390
West Leg						
Approach	1,150	2	1,152	1,694	3	1,697
Departure	2,054	8	2,062	2,117	6	2,123
Total	3,204	10	3,214	3,811	9	3,820
Total Approaches						
Approach	5,259	16	5,275	5,842	14	5,856
Departure	5,259	16	5,275	5,842	14	5,856
Total	10,518	32	10,550	11,684	28	11,712

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
10 I-880 Southbound Ramps/Industrial Parkway W						
NBL	0	0	0	0	0	0
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	306	0	306	517	0	517
SBT	0	0	0	0	0	0
SBR	393	0	393	363	0	363
EBL	226	0	226	440	0	440
EBT	1,006	1	1,007	1,733	2	1,735
EBR	0	0	0	0	0	0
WBL	0	0	0	0	0	0
WBT	1,789	2	1,791	1,592	2	1,594
WBR	592	5	597	275	4	279
North Leg						
Approach	699	0	699	880	0	880
Departure	818	5	823	715	4	719
Total	1,517	5	1,522	1,595	4	1,599
South Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
East Leg						
Approach	2,381	7	2,388	1,867	6	1,873
Departure	1,312	1	1,313	2,250	2	2,252
Total	3,693	8	3,701	4,117	8	4,125
West Leg						
Approach	1,232	1	1,233	2,173	2	2,175
Departure	2,182	2	2,184	1,955	2	1,957
Total	3,414	3	3,417	4,128	4	4,132
Total Approaches						
Approach	4,312	8	4,320	4,920	8	4,928
Departure	4,312	8	4,320	4,920	8	4,928
Total	8,624	16	8,640	9,840	16	9,856

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
11 I-880 Northbound Ramps - Industrial Parkway SW/Whipple Road						
NBL	555	0	555	194	0	194
NBT	816	3	819	844	5	849
NBR	340	0	340	119	0	119
SBL	710	0	710	614	0	614
SBT	0	0	0	0	0	0
SBR	1,468	6	1,474	1,102	5	1,107
EBL	595	4	599	1,228	6	1,234
EBT	958	0	958	932	0	932
EBR	0	0	0	0	0	0
WBL	0	0	0	0	0	0
WBT	1,026	0	1,026	1,104	0	1,104
WBR	371	0	371	789	0	789
North Leg						
Approach	2,178	6	2,184	1,716	5	1,721
Departure	1,782	7	1,789	2,861	11	2,872
Total	3,960	13	3,973	4,577	16	4,593
South Leg						
Approach	1,711	3	1,714	1,157	5	1,162
Departure	0	0	0	0	0	0
Total	1,711	3	1,714	1,157	5	1,162
East Leg						
Approach	1,397	0	1,397	1,893	0	1,893
Departure	2,008	0	2,008	1,665	0	1,665
Total	3,405	0	3,405	3,558	0	3,558
West Leg						
Approach	1,553	4	1,557	2,160	6	2,166
Departure	3,049	6	3,055	2,400	5	2,405
Total	4,602	10	4,612	4,560	11	4,571
Total Approaches						
Approach	6,839	13	6,852	6,926	16	6,942
Departure	6,839	13	6,852	6,926	16	6,942
Total	13,678	26	13,704	13,852	32	13,884

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
12 Project Driveway/Tennyson Road						
NBL	0	26	26	0	20	20
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	0	0	0	0	0	0
SBT	0	0	0	0	0	0
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	23	0	23	71	0	71
EBR	0	15	15	0	26	26
WBL	0	0	0	0	0	0
WBT	39	0	39	48	0	48
WBR	0	0	0	0	0	0
North Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
South Leg						
Approach	0	26	26	0	20	20
Departure	0	15	15	0	26	26
Total	0	41	41	0	46	46
East Leg						
Approach	39	0	39	48	0	48
Departure	23	0	23	71	0	71
Total	62	0	62	119	0	119
West Leg						
Approach	23	15	38	71	26	97
Departure	39	26	65	48	20	68
Total	62	41	103	119	46	165
Total Approaches						
Approach	62	41	103	119	46	165
Departure	62	41	103	119	46	165
Total	124	82	206	238	92	330

Cumulative Condition with I-880 Improvements

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
1 Mission Boulevard (SR-238)/Harder Road						
NBL	340	5	345	430	4	434
NBT	1,645	19	1,664	2,276	14	2,290
NBR	259	3	262	327	2	329
SBL	80	0	80	169	0	169
SBT	2,387	11	2,398	1,831	19	1,850
SBR	196	0	196	302	0	302
EBL	383	0	383	481	0	481
EBT	276	0	276	328	0	328
EBR	410	3	413	542	5	547
WBL	255	2	257	197	3	200
WBT	136	0	136	232	0	232
WBR	54	0	54	79	0	79
North Leg						
Approach	2,663	11	2,674	2,302	19	2,321
Departure	2,082	19	2,101	2,836	14	2,850
Total	4,745	30	4,775	5,138	33	5,171
South Leg						
Approach	2,244	27	2,271	3,033	20	3,053
Departure	3,052	16	3,068	2,570	27	2,597
Total	5,296	43	5,339	5,603	47	5,650
East Leg						
Approach	445	2	447	508	3	511
Departure	615	3	618	824	2	826
Total	1,060	5	1,065	1,332	5	1,337
West Leg						
Approach	1,069	3	1,072	1,351	5	1,356
Departure	672	5	677	964	4	968
Total	1,741	8	1,749	2,315	9	2,324
Total Approaches						
Approach	6,421	43	6,464	7,194	47	7,241
Departure	6,421	43	6,464	7,194	47	7,241
Total	12,842	86	12,928	14,388	94	14,482

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
2 Mission Boulevard (SR-238)/Tennyson Road						
NBL	365	15	380	571	11	582
NBT	1,739	18	1,757	2,323	13	2,336
NBR	5	0	5	2	0	2
SBL	15	6	21	62	10	72
SBT	2,535	10	2,545	1,823	18	1,841
SBR	371	0	371	523	0	523
EBL	484	0	484	528	0	528
EBT	3	6	9	7	11	18
EBR	392	8	400	425	14	439
WBL	24	0	24	14	0	14
WBT	16	16	32	19	12	31
WBR	0	10	10	15	8	23
North Leg						
Approach	2,921	16	2,937	2,408	28	2,436
Departure	2,223	28	2,251	2,866	21	2,887
Total	5,144	44	5,188	5,274	49	5,323
South Leg						
Approach	2,109	33	2,142	2,896	24	2,920
Departure	2,951	18	2,969	2,262	32	2,294
Total	5,060	51	5,111	5,158	56	5,214
East Leg						
Approach	40	26	66	48	20	68
Departure	23	12	35	71	21	92
Total	63	38	101	119	41	160
West Leg						
Approach	879	14	893	960	25	985
Departure	752	31	783	1,113	23	1,136
Total	1,631	45	1,676	2,073	48	2,121
Total Approaches						
Approach	5,949	89	6,038	6,312	97	6,409
Departure	5,949	89	6,038	6,312	97	6,409
Total	11,898	178	12,076	12,624	194	12,818

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
3 Mission Boulevard (SR-238)/Valle Vista Avenue - Project Driveway						
NBL	67	0	67	115	0	115
NBT	2,100	0	2,100	2,956	0	2,956
NBR	0	27	27	0	47	47
SBL	0	18	18	0	32	32
SBT	2,979	0	2,979	2,220	0	2,220
SBR	40	0	40	96	0	96
EBL	62	0	62	29	0	29
EBT	0	1	1	0	2	2
EBR	88	0	88	76	0	76
WBL	0	44	44	0	33	33
WBT	0	2	2	0	2	2
WBR	0	32	32	0	24	24
North Leg						
Approach	3,019	18	3,037	2,316	32	2,348
Departure	2,162	32	2,194	2,985	24	3,009
Total	5,181	50	5,231	5,301	56	5,357
South Leg						
Approach	2,167	27	2,194	3,071	47	3,118
Departure	3,067	44	3,111	2,296	33	2,329
Total	5,234	71	5,305	5,367	80	5,447
East Leg						
Approach	0	78	78	0	59	59
Departure	0	46	46	0	81	81
Total	0	124	124	0	140	140
West Leg						
Approach	150	1	151	105	2	107
Departure	107	2	109	211	2	213
Total	257	3	260	316	4	320
Total Approaches						
Approach	5,336	124	5,460	5,492	140	5,632
Departure	5,336	124	5,460	5,492	140	5,632
Total	10,672	248	10,920	10,984	280	11,264

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
4 Mission Boulevard (SR-238)/Industrial Parkway W						
NBL	639	0	639	623	0	623
NBT	1,467	12	1,479	2,243	21	2,264
NBR	11	0	11	22	0	22
SBL	113	0	113	152	0	152
SBT	2,083	21	2,104	1,698	16	1,714
SBR	849	23	872	444	17	461
EBL	402	15	417	683	27	710
EBT	167	0	167	191	0	191
EBR	496	0	496	807	0	807
WBL	25	0	25	14	0	14
WBT	232	0	232	146	0	146
WBR	286	0	286	145	0	145
North Leg						
Approach	3,045	44	3,089	2,294	33	2,327
Departure	2,155	27	2,182	3,071	48	3,119
Total	5,200	71	5,271	5,365	81	5,446
South Leg						
Approach	2,117	12	2,129	2,888	21	2,909
Departure	2,604	21	2,625	2,519	16	2,535
Total	4,721	33	4,754	5,407	37	5,444
East Leg						
Approach	543	0	543	305	0	305
Departure	291	0	291	365	0	365
Total	834	0	834	670	0	670
West Leg						
Approach	1,065	15	1,080	1,681	27	1,708
Departure	1,720	23	1,743	1,213	17	1,230
Total	2,785	38	2,823	2,894	44	2,938
Total Approaches						
Approach	6,770	71	6,841	7,168	81	7,249
Departure	6,770	71	6,841	7,168	81	7,249
Total	13,540	142	13,682	14,336	162	14,498

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
5 Mission Boulevard (SR-238)/Whipple Road						
NBL	456	0	456	414	0	414
NBT	1,392	8	1,400	2,803	14	2,817
NBR	37	0	37	47	0	47
SBL	26	0	26	30	0	30
SBT	2,723	15	2,738	1,733	11	1,744
SBR	113	1	114	155	1	156
EBL	169	1	170	230	1	231
EBT	20	0	20	20	0	20
EBR	337	0	337	434	0	434
WBL	69	0	69	51	0	51
WBT	19	0	19	12	0	12
WBR	24	0	24	18	0	18
North Leg						
Approach	2,862	16	2,878	1,918	12	1,930
Departure	1,585	9	1,594	3,051	15	3,066
Total	4,447	25	4,472	4,969	27	4,996
South Leg						
Approach	1,885	8	1,893	3,264	14	3,278
Departure	3,129	15	3,144	2,218	11	2,229
Total	5,014	23	5,037	5,482	25	5,507
East Leg						
Approach	112	0	112	81	0	81
Departure	83	0	83	97	0	97
Total	195	0	195	178	0	178
West Leg						
Approach	526	1	527	684	1	685
Departure	588	1	589	581	1	582
Total	1,114	2	1,116	1,265	2	1,267
Total Approaches						
Approach	5,385	25	5,410	5,947	27	5,974
Departure	5,385	25	5,410	5,947	27	5,974
Total	10,770	50	10,820	11,894	54	11,948

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
6 Dixon Street/Valle Vista Avenue						
NBL	5	0	5	21	0	21
NBT	594	0	594	664	0	664
NBR	69	1	70	60	2	62
SBL	83	0	83	68	0	68
SBT	658	0	658	607	0	607
SBR	11	0	11	11	0	11
EBL	13	0	13	11	0	11
EBT	3	0	3	8	0	8
EBR	11	0	11	11	0	11
WBL	67	2	69	95	2	97
WBT	0	0	0	5	0	5
WBR	70	0	70	98	0	98
North Leg						
Approach	752	0	752	686	0	686
Departure	677	0	677	773	0	773
Total	1,429	0	1,429	1,459	0	1,459
South Leg						
Approach	668	1	669	745	2	747
Departure	736	2	738	713	2	715
Total	1,404	3	1,407	1,458	4	1,462
East Leg						
Approach	137	2	139	198	2	200
Departure	155	1	156	136	2	138
Total	292	3	295	334	4	338
West Leg						
Approach	27	0	27	30	0	30
Departure	16	0	16	37	0	37
Total	43	0	43	67	0	67
Total Approaches						
Approach	1,584	3	1,587	1,659	4	1,663
Departure	1,584	3	1,587	1,659	4	1,663
Total	3,168	6	3,174	3,318	8	3,326

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
7 Huntwood Avenue/Tennyson Road						
NBL	202	0	202	189	0	189
NBT	209	0	209	492	0	492
NBR	257	1	258	441	1	442
SBL	212	2	214	126	4	130
SBT	308	0	308	226	0	226
SBR	58	0	58	56	0	56
EBL	50	0	50	140	0	140
EBT	987	12	999	1,260	21	1,281
EBR	144	0	144	148	0	148
WBL	365	1	366	431	1	432
WBT	1,230	25	1,255	1,082	19	1,101
WBR	72	4	76	66	3	69
North Leg						
Approach	578	2	580	408	4	412
Departure	331	4	335	698	3	701
Total	909	6	915	1,106	7	1,113
South Leg						
Approach	668	1	669	1,122	1	1,123
Departure	817	1	818	805	1	806
Total	1,485	2	1,487	1,927	2	1,929
East Leg						
Approach	1,667	30	1,697	1,579	23	1,602
Departure	1,456	15	1,471	1,827	26	1,853
Total	3,123	45	3,168	3,406	49	3,455
West Leg						
Approach	1,181	12	1,193	1,548	21	1,569
Departure	1,490	25	1,515	1,327	19	1,346
Total	2,671	37	2,708	2,875	40	2,915
Total Approaches						
Approach	4,094	45	4,139	4,657	49	4,706
Departure	4,094	45	4,139	4,657	49	4,706
Total	8,188	90	8,278	9,314	98	9,412

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
8 Huntwood Avenue/Industrial Parkway W						
NBL	242	0	242	586	0	586
NBT	180	0	180	848	0	848
NBR	123	3	126	460	5	465
SBL	148	1	149	138	1	139
SBT	630	0	630	235	0	235
SBR	186	0	186	152	0	152
EBL	147	0	147	404	0	404
EBT	677	11	688	1,676	19	1,695
EBR	464	0	464	260	0	260
WBL	520	5	525	176	4	180
WBT	1,731	15	1,746	1,007	11	1,018
WBR	77	1	78	157	1	158
North Leg						
Approach	964	1	965	525	1	526
Departure	404	1	405	1,409	1	1,410
Total	1,368	2	1,370	1,934	2	1,936
South Leg						
Approach	545	3	548	1,894	5	1,899
Departure	1,614	5	1,619	671	4	675
Total	2,159	8	2,167	2,565	9	2,574
East Leg						
Approach	2,328	21	2,349	1,340	16	1,356
Departure	948	15	963	2,274	25	2,299
Total	3,276	36	3,312	3,614	41	3,655
West Leg						
Approach	1,288	11	1,299	2,340	19	2,359
Departure	2,159	15	2,174	1,745	11	1,756
Total	3,447	26	3,473	4,085	30	4,115
Total Approaches						
Approach	5,125	36	5,161	6,099	41	6,140
Departure	5,125	36	5,161	6,099	41	6,140
Total	10,250	72	10,322	12,198	82	12,280

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
9 Ruus Road - Industrial Parkway SW/Industrial Parkway W						
NBL	512	0	512	874	0	874
NBT	196	0	196	802	0	802
NBR	89	0	89	43	0	43
SBL	44	0	44	33	0	33
SBT	694	0	694	362	0	362
SBR	113	0	113	74	0	74
EBL	53	0	53	119	0	119
EBT	929	4	933	1,501	7	1,508
EBR	237	0	237	240	0	240
WBL	952	6	958	758	5	763
WBT	1,236	8	1,244	1,004	6	1,010
WBR	33	0	33	58	0	58
North Leg						
Approach	851	0	851	469	0	469
Departure	282	0	282	979	0	979
Total	1,133	0	1,133	1,448	0	1,448
South Leg						
Approach	797	0	797	1,719	0	1,719
Departure	1,883	6	1,889	1,360	5	1,365
Total	2,680	6	2,686	3,079	5	3,084
East Leg						
Approach	2,221	14	2,235	1,820	11	1,831
Departure	1,062	4	1,066	1,577	7	1,584
Total	3,283	18	3,301	3,397	18	3,415
West Leg						
Approach	1,219	4	1,223	1,860	7	1,867
Departure	1,861	8	1,869	1,952	6	1,958
Total	3,080	12	3,092	3,812	13	3,825
Total Approaches						
Approach	5,088	18	5,106	5,868	18	5,886
Departure	5,088	18	5,106	5,868	18	5,886
Total	10,176	36	10,212	11,736	36	11,772

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
10 I-880 Southbound Ramps/Industrial Parkway W - Alt 1: Loop-On and Slip-On						
NBL	0	0	0	0	0	0
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	306	0	306	454	0	454
SBT	0	0	0	0	0	0
SBR	397	0	397	379	0	379
EBL	0	0	0	0	0	0
EBT	1,010	1	1,011	1,628	2	1,630
EBR	218	0	218	499	0	499
WBL	0	0	0	0	0	0
WBT	2,109	2	2,111	1,793	2	1,795
WBR	579	5	584	292	4	296
North Leg						
Approach	703	0	703	833	0	833
Departure	579	5	584	292	4	296
Total	1,282	5	1,287	1,125	4	1,129
South Leg						
Approach	0	0	0	0	0	0
Departure	218	0	218	499	0	499
Total	218	0	218	499	0	499
East Leg						
Approach	2,688	7	2,695	2,085	6	2,091
Departure	1,316	1	1,317	2,082	2	2,084
Total	4,004	8	4,012	4,167	8	4,175
West Leg						
Approach	1,228	1	1,229	2,127	2	2,129
Departure	2,506	2	2,508	2,172	2	2,174
Total	3,734	3	3,737	4,299	4	4,303
Total Approaches						
Approach	4,619	8	4,627	5,045	8	5,053
Departure	4,619	8	4,627	5,045	8	5,053
Total	9,238	16	9,254	10,090	16	10,106

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
10 I-880 Southbound Ramps/Industrial Parkway W - Alt 2: Diamond Interchange						
NBL	0	0	0	0	0	0
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	306	0	306	454	0	454
SBT	0	0	0	0	0	0
SBR	397	0	397	379	0	379
EBL			0			0
EBT	1,010	1	1,011	1,628	2	1,630
EBR	218	0	218	499	0	499
WBL	579	5	584	292	4	296
WBT	2,109	2	2,111	1,793	2	1,795
WBR			0			0
North Leg						
Approach	703	0	703	833	0	833
Departure	0	0	0	0	0	0
Total	703	0	703	833	0	833
South Leg						
Approach	0	0	0	0	0	0
Departure	797	5	802	791	4	795
Total	797	5	802	791	4	795
East Leg						
Approach	2,688	7	2,695	2,085	6	2,091
Departure	1,316	1	1,317	2,082	2	2,084
Total	4,004	8	4,012	4,167	8	4,175
West Leg						
Approach	1,228	1	1,229	2,127	2	2,129
Departure	2,506	2	2,508	2,172	2	2,174
Total	3,734	3	3,737	4,299	4	4,303
Total Approaches						
Approach	4,619	8	4,627	5,045	8	5,053
Departure	4,619	8	4,627	5,045	8	5,053
Total	9,238	16	9,254	10,090	16	10,106

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
11 I-880 Northbound Ramps - Industrial Parkway SW/Whipple Road						
NBL	314	0	314	129	0	129
NBT	449	3	452	552	5	557
NBR	324	0	324	119	0	119
SBL	668	0	668	622	0	622
SBT	0	0	0	0	0	0
SBR	1,497	6	1,503	1,131	5	1,136
EBL	626	4	630	1,210	6	1,216
EBT	986	0	986	925	0	925
EBR	0	0	0	0	0	0
WBL	0	0	0	0	0	0
WBT	1,059	0	1,059	1,147	0	1,147
WBR	362	0	362	803	0	803
North Leg						
Approach	2,165	6	2,171	1,753	5	1,758
Departure	1,437	7	1,444	2,565	11	2,576
Total	3,602	13	3,615	4,318	16	4,334
South Leg						
Approach	1,087	3	1,090	800	5	805
Departure	0	0	0	0	0	0
Total	1,087	3	1,090	800	5	805
East Leg						
Approach	1,421	0	1,421	1,950	0	1,950
Departure	1,978	0	1,978	1,666	0	1,666
Total	3,399	0	3,399	3,616	0	3,616
West Leg						
Approach	1,612	4	1,616	2,135	6	2,141
Departure	2,870	6	2,876	2,407	5	2,412
Total	4,482	10	4,492	4,542	11	4,553
Total Approaches						
Approach	6,285	13	6,298	6,638	16	6,654
Departure	6,285	13	6,298	6,638	16	6,654
Total	12,570	26	12,596	13,276	32	13,308

Table C-4-Build-Out (2035) Peak Hour Volume Summary

	AM Peak Hour			PM Peak Hour		
	Build-Out Without Project	Net Project Trips	Build-Out With Project	Build-Out Without Project	Net Project Trips	Build-Out With Project
12 Project Driveway/Tennyson Road						
NBL	0	26	26	0	20	20
NBT	0	0	0	0	0	0
NBR	0	0	0	0	0	0
SBL	0	0	0	0	0	0
SBT	0	0	0	0	0	0
SBR	0	0	0	0	0	0
EBL	0	0	0	0	0	0
EBT	23	0	23	71	0	71
EBR	0	12	12	0	22	22
WBL	0	0	0	0	0	0
WBT	40	0	40	48	0	48
WBR	0	0	0	0	0	0
North Leg						
Approach	0	0	0	0	0	0
Departure	0	0	0	0	0	0
Total	0	0	0	0	0	0
South Leg						
Approach	0	26	26	0	20	20
Departure	0	12	12	0	22	22
Total	0	38	38	0	42	42
East Leg						
Approach	40	0	40	48	0	48
Departure	23	0	23	71	0	71
Total	63	0	63	119	0	119
West Leg						
Approach	23	12	35	71	22	93
Departure	40	26	66	48	20	68
Total	63	38	101	119	42	161
Total Approaches						
Approach	63	38	101	119	42	161
Departure	63	38	101	119	42	161
Total	126	76	202	238	84	322

APPENDIX D

BACKGROUND FUTURE VOLUME DATA

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
1	**Mission Boulevard (SR-238)/Harder Road**						
NBL		247	347	100	278	5	283
NBT		931	1,636	705	1,151	19	1,170
NBR		76	256	180	132	3	135
SBL		23	79	56	41	0	41
SBT		1,421	2,381	960	1,721	11	1,732
SBR		140	202	62	159	0	159
EBL		286	390	104	319	0	319
EBT		107	279	172	161	0	161
EBR		328	416	88	356	3	359
WBL		146	256	110	180	2	182
WBT		93	140	47	108	0	108
WBR		29	55	26	37	0	37
North Leg							
	Approach	1,584	2,662	1,078	1,921	11	1,932
	Departure	1,246	2,081	835	1,507	19	1,526
	Total	2,830	4,743	1,913	3,428	30	3,458
South Leg							
	Approach	1,254	2,239	985	1,562	27	1,588
	Departure	1,895	3,053	1,158	2,257	16	2,273
	Total	3,149	5,292	2,143	3,819	43	3,861
East Leg							
	Approach	268	451	183	325	2	327
	Departure	206	614	408	334	3	337
	Total	474	1,065	591	659	5	664
West Leg							
	Approach	721	1,085	364	835	3	839
	Departure	480	689	209	545	5	550
	Total	1,201	1,774	573	1,380	8	1,389
Total Approaches							
	Approach	3,827	6,437	2,610	4,643	43	4,686
	Departure	3,827	6,437	2,610	4,643	43	4,686
	Total	7,654	12,874	5,220	9,285	86	9,372

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
2	**Mission Boulevard (SR-238)/Tennyson Road**						
NBL		212	352	140	256	15	271
NBT		953	1,750	797	1,202	18	1,220
NBR		3	5	2	4	0	4
SBL		9	15	6	11	6	17
SBT		1,542	2,551	1,009	1,857	10	1,867
SBR		227	358	131	268	0	268
EBL		317	475	158	366	0	366
EBT		2	3	1	2	9	11
EBR		270	384	114	306	8	314
WBL		3	24	21	10	0	10
WBT		2	15	13	6	16	22
WBR		0	0	0	0	10	10
North Leg							
	Approach	1,778	2,924	1,146	2,136	16	2,152
	Departure	1,270	2,225	955	1,568	28	1,596
	Total	3,048	5,149	2,101	3,705	44	3,749
South Leg							
	Approach	1,168	2,107	939	1,461	33	1,494
	Departure	1,815	2,959	1,144	2,173	18	2,191
	Total	2,983	5,066	2,083	3,634	51	3,685
East Leg							
	Approach	5	39	34	16	26	42
	Departure	14	23	9	17	15	32
	Total	19	62	43	32	41	73
West Leg							
	Approach	589	862	273	674	17	691
	Departure	441	725	284	530	31	561
	Total	1,030	1,587	557	1,204	48	1,252
Total Approaches							
	Approach	3,540	5,932	2,392	4,288	92	4,380
	Departure	3,540	5,932	2,392	4,288	92	4,380
	Total	7,080	11,864	4,784	8,575	184	8,759

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
3	**Mission Boulevard (SR-238)/Valle Vista Avenue - Project Driveway**						
NBL		59	67	8	62	0	62
NBT		1,203	2,096	893	1,482	0	1,482
NBR		0	0	0	0	25	25
SBL		0	0	0	0	18	18
SBT		1,857	2,988	1,131	2,210	0	2,210
SBR		36	40	4	37	0	37
EBL		19	63	44	33	0	33
EBT		0	0	0	0	1	1
EBR		29	90	61	48	0	48
WBL		0	0	0	0	44	44
WBT		0	0	0	0	2	2
WBR		0	0	0	0	32	32
North Leg							
	Approach	1,893	3,028	1,135	2,248	18	2,266
	Departure	1,222	2,159	937	1,515	32	1,547
	Total	3,115	5,187	2,072	3,763	50	3,813
South Leg							
	Approach	1,262	2,163	901	1,544	25	1,569
	Departure	1,886	3,078	1,192	2,259	44	2,303
	Total	3,148	5,241	2,093	3,802	69	3,871
East Leg							
	Approach	0	0	0	0	78	78
	Departure	0	0	0	0	44	44
	Total	0	0	0	0	122	122
West Leg							
	Approach	48	153	105	81	1	82
	Departure	95	107	12	99	2	101
	Total	143	260	117	180	3	183
Total Approaches							
	Approach	3,203	5,344	2,141	3,872	122	3,994
	Departure	3,203	5,344	2,141	3,872	122	3,994
	Total	6,406	10,688	4,282	7,744	244	7,988

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
4	**Mission Boulevard (SR-238)/Industrial Parkway W**						
NBL		298	663	365	412	0	412
NBT		746	1,459	713	969	12	981
NBR		7	11	4	8	0	8
SBL		104	114	10	107	0	107
SBT		1,184	2,075	891	1,462	21	1,483
SBR		574	867	293	666	23	689
EBL		245	408	163	296	13	309
EBT		127	174	47	142	0	142
EBR		233	512	279	320	0	320
WBL		18	25	7	20	0	20
WBT		201	241	40	214	0	214
WBR		269	284	15	274	0	274
North Leg							
	Approach	1,862	3,056	1,194	2,235	44	2,279
	Departure	1,260	2,151	891	1,538	25	1,563
	Total	3,122	5,207	2,085	3,774	69	3,843
South Leg							
	Approach	1,051	2,133	1,082	1,389	12	1,401
	Departure	1,435	2,612	1,177	1,803	21	1,824
	Total	2,486	4,745	2,259	3,192	33	3,225
East Leg							
	Approach	488	550	62	507	0	507
	Departure	238	299	61	257	0	257
	Total	726	849	123	764	0	764
West Leg							
	Approach	605	1,094	489	758	13	771
	Departure	1,073	1,771	698	1,291	23	1,314
	Total	1,678	2,865	1,187	2,049	36	2,085
Total Approaches							
	Approach	4,006	6,833	2,827	4,889	69	4,958
	Departure	4,006	6,833	2,827	4,889	69	4,958
	Total	8,012	13,666	5,654	9,779	138	9,917

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
5	**Mission Boulevard (SR-238)/Whipple Road**						
NBL		283	454	171	336	0	336
NBT		582	1,397	815	837	8	845
NBR		8	38	30	17	0	17
SBL		9	26	17	14	0	14
SBT		1,525	2,726	1,201	1,900	15	1,915
SBR		108	113	5	110	1	111
EBL		136	170	34	147	1	148
EBT		8	20	12	12	0	12
EBR		224	337	113	259	0	259
WBL		28	69	41	41	0	41
WBT		14	19	5	16	0	16
WBR		12	25	13	16	0	16
North Leg							
	Approach	1,642	2,865	1,223	2,024	16	2,040
	Departure	730	1,592	862	999	9	1,008
	Total	2,372	4,457	2,085	3,024	25	3,049
South Leg							
	Approach	873	1,889	1,016	1,191	8	1,199
	Departure	1,777	3,132	1,355	2,200	15	2,215
	Total	2,650	5,021	2,371	3,391	23	3,414
East Leg							
	Approach	54	113	59	72	0	72
	Departure	25	84	59	43	0	43
	Total	79	197	118	116	0	116
West Leg							
	Approach	368	527	159	418	1	419
	Departure	405	586	181	462	1	463
	Total	773	1,113	340	879	2	881
Total Approaches							
	Approach	2,937	5,394	2,457	3,705	25	3,730
	Departure	2,937	5,394	2,457	3,705	25	3,730
	Total	5,874	10,788	4,914	7,410	50	7,460

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
6	**Dixon Street/Valle Vista Avenue**						
NBL		4	5	1	4	0	4
NBT		335	595	260	416	0	416
NBR		21	74	53	38	1	39
SBL		30	81	51	46	0	46
SBT		290	668	378	408	0	408
SBR		10	11	1	10	0	10
EBL		12	13	1	12	0	12
EBT		2	3	1	2	0	2
EBR		9	11	2	10	0	10
WBL		49	71	22	56	2	58
WBT		0	0	0	0	0	0
WBR		67	70	3	68	0	68
North Leg							
	Approach	330	760	430	464	0	464
	Departure	414	678	264	497	0	497
	Total	744	1,438	694	961	0	961
South Leg							
	Approach	360	674	314	458	1	459
	Departure	348	750	402	474	2	476
	Total	708	1,424	716	932	3	935
East Leg							
	Approach	116	141	25	124	2	126
	Departure	53	158	105	86	1	87
	Total	169	299	130	210	3	213
West Leg							
	Approach	23	27	4	24	0	24
	Departure	14	16	2	15	0	15
	Total	37	43	6	39	0	39
Total Approaches							
	Approach	829	1,602	773	1,071	3	1,074
	Departure	829	1,602	773	1,071	3	1,074
	Total	1,658	3,204	1,546	2,141	6	2,147

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
7	**Huntwood Avenue/Tennyson Road**						
NBL		91	199	108	125	0	125
NBT		97	209	112	132	0	132
NBR		112	253	141	156	1	157
SBL		169	212	43	182	2	184
SBT		230	296	66	251	0	251
SBR		48	58	10	51	0	51
EBL		43	52	9	46	0	46
EBT		798	1,017	219	866	14	880
EBR		109	143	34	120	0	120
WBL		208	359	151	255	1	256
WBT		774	1,256	482	925	25	950
WBR		47	75	28	56	4	60
North Leg							
	Approach	447	566	119	484	2	486
	Departure	187	336	149	234	4	238
	Total	634	902	268	718	6	724
South Leg							
	Approach	300	661	361	413	1	414
	Departure	547	798	251	625	1	626
	Total	847	1,459	612	1,038	2	1,040
East Leg							
	Approach	1,029	1,690	661	1,236	30	1,266
	Departure	1,079	1,482	403	1,205	17	1,222
	Total	2,108	3,172	1,064	2,441	47	2,488
West Leg							
	Approach	950	1,212	262	1,032	14	1,046
	Departure	913	1,513	600	1,101	25	1,126
	Total	1,863	2,725	862	2,132	39	2,171
Total Approaches							
	Approach	2,726	4,129	1,403	3,164	47	3,211
	Departure	2,726	4,129	1,403	3,164	47	3,211
	Total	5,452	8,258	2,806	6,329	94	6,423

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
8	**Huntwood Avenue/Industrial Parkway W**						
NBL		209	257	48	224	0	224
NBT		112	188	76	136	0	136
NBR		109	128	19	115	3	118
SBL		84	146	62	103	1	104
SBT		412	635	223	482	0	482
SBR		103	188	85	130	0	130
EBL		73	143	70	95	0	95
EBT		479	658	179	535	8	543
EBR		377	457	80	402	0	402
WBL		376	524	148	422	5	427
WBT		1,060	1,746	686	1,274	15	1,289
WBR		34	76	42	47	1	48
North Leg							
	Approach	599	969	370	715	1	716
	Departure	219	407	188	278	1	279
	Total	818	1,376	558	992	2	994
South Leg							
	Approach	430	573	143	475	3	478
	Departure	1,165	1,616	451	1,306	5	1,311
	Total	1,595	2,189	594	1,781	8	1,789
East Leg							
	Approach	1,470	2,346	876	1,744	21	1,765
	Departure	672	932	260	753	12	765
	Total	2,142	3,278	1,136	2,497	33	2,530
West Leg							
	Approach	929	1,258	329	1,032	8	1,040
	Departure	1,372	2,191	819	1,628	15	1,643
	Total	2,301	3,449	1,148	2,660	23	2,683
Total Approaches							
	Approach	3,428	5,146	1,718	3,965	33	3,998
	Departure	3,428	5,146	1,718	3,965	33	3,998
	Total	6,856	10,292	3,436	7,930	66	7,996

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
9	**Ruus Road - Industrial Parkway SW/Industrial Parkway W**						
NBL		39	664	625	234	0	234
NBT		76	225	149	123	0	123
NBR		7	105	98	38	0	38
SBL		42	44	2	43	0	43
SBT		349	703	354	460	0	460
SBR		108	113	5	110	0	110
EBL		27	28	1	27	0	27
EBT		647	884	237	721	2	723
EBR		74	238	164	125	0	125
WBL		363	945	582	545	6	551
WBT		1,015	1,277	262	1,097	8	1,105
WBR		31	33	2	32	0	32
North Leg							
	Approach	499	860	361	612	0	612
	Departure	134	286	152	182	0	182
	Total	633	1,146	513	793	0	793
South Leg							
	Approach	122	994	872	395	0	395
	Departure	786	1,886	1,100	1,130	6	1,136
	Total	908	2,880	1,972	1,524	6	1,530
East Leg							
	Approach	1,409	2,255	846	1,673	14	1,687
	Departure	696	1,033	337	801	2	803
	Total	2,105	3,288	1,183	2,475	16	2,491
West Leg							
	Approach	748	1,150	402	874	2	876
	Departure	1,162	2,054	892	1,441	8	1,449
	Total	1,910	3,204	1,294	2,314	10	2,324
Total Approaches							
	Approach	2,778	5,259	2,481	3,553	16	3,569
	Departure	2,778	5,259	2,481	3,553	16	3,569
	Total	5,556	10,518	4,962	7,107	32	7,139

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
10	**I-880 Southbound Ramps/Industrial Parkway W**						
NBL		0	0	0	0	0	0
NBT		0	0	0	0	0	0
NBR		0	0	0	0	0	0
SBL		291	306	15	296	0	296
SBT		0	0	0	0	0	0
SBR		378	393	15	383	0	383
EBL		148	226	78	172	0	172
EBT		585	1,006	421	717	1	718
EBR		0	0	0	0	0	0
WBL		0	0	0	0	0	0
WBT		991	1,789	798	1,240	2	1,242
WBR		493	592	99	524	5	529
North Leg							
	Approach	669	699	30	678	0	678
	Departure	641	818	177	696	5	701
	Total	1,310	1,517	207	1,375	5	1,380
South Leg							
	Approach	0	0	0	0	0	0
	Departure	0	0	0	0	0	0
	Total	0	0	0	0	0	0
East Leg							
	Approach	1,484	2,381	897	1,764	7	1,771
	Departure	876	1,312	436	1,012	1	1,013
	Total	2,360	3,693	1,333	2,777	8	2,785
West Leg							
	Approach	733	1,232	499	889	1	890
	Departure	1,369	2,182	813	1,623	2	1,625
	Total	2,102	3,414	1,312	2,512	3	2,515
Total Approaches							
	Approach	2,886	4,312	1,426	3,332	8	3,340
	Departure	2,886	4,312	1,426	3,332	8	3,340
	Total	5,772	8,624	2,852	6,663	16	6,679

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
11	**I-880 Northbound Ramps - Industrial Parkway SW/Whipple Road**						
NBL		529	555	26	537	0	537
NBT		456	816	360	569	3	572
NBR		322	340	18	328	0	328
SBL		306	710	404	432	0	432
SBT		0	0	0	0	0	0
SBR		864	1,468	604	1,053	6	1,059
EBL		261	595	334	365	4	369
EBT		712	958	246	789	0	789
EBR		0	0	0	0	0	0
WBL		0	0	0	0	0	0
WBT		864	1,026	162	915	0	915
WBR		135	371	236	209	0	209
North Leg							
	Approach	1,170	2,178	1,008	1,485	6	1,491
	Departure	852	1,782	930	1,143	7	1,150
	Total	2,022	3,960	1,938	2,628	13	2,641
South Leg							
	Approach	1,307	1,711	404	1,433	3	1,436
	Departure	0	0	0	0	0	0
	Total	1,307	1,711	404	1,433	3	1,436
East Leg							
	Approach	999	1,397	398	1,123	0	1,123
	Departure	1,340	2,008	668	1,549	0	1,549
	Total	2,339	3,405	1,066	2,672	0	2,672
West Leg							
	Approach	973	1,553	580	1,154	4	1,158
	Departure	2,257	3,049	792	2,505	6	2,511
	Total	3,230	4,602	1,372	3,659	10	3,669
Total Approaches							
	Approach	4,449	6,839	2,390	5,196	13	5,209
	Departure	4,449	6,839	2,390	5,196	13	5,209
	Total	8,898	13,678	4,780	10,392	26	10,418

Table C-2 - Background (2024) Peak Hour Volume Summary

		AM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
12	**Project Driveway/Tennyson Road**						
NBL		0	0	0	0	26	26
NBT		0	0	0	0	0	0
NBR		0	0	0	0	0	0
SBL		0	0	0	0	0	0
SBT		0	0	0	0	0	0
SBR		0	0	0	0	0	0
EBL		0	0	0	0	0	0
EBT		14	23	9	17	0	17
EBR		0	0	0	0	15	15
WBL		0	0	0	0	0	0
WBT		5	39	34	16	0	16
WBR		0	0	0	0	0	0
North Leg							
	Approach	0	0	0	0	0	0
	Departure	0	0	0	0	0	0
	Total	0	0	0	0	0	0
South Leg							
	Approach	0	0	0	0	26	26
	Departure	0	0	0	0	15	15
	Total	0	0	0	0	41	41
East Leg							
	Approach	5	39	34	16	0	16
	Departure	14	23	9	17	0	17
	Total	19	62	43	32	0	32
West Leg							
	Approach	14	23	9	17	15	32
	Departure	5	39	34	16	26	42
	Total	19	62	43	32	41	73
Total Approaches							
	Approach	19	62	43	32	41	73
	Departure	19	62	43	32	41	73
	Total	38	124	86	65	82	147

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
1	**Mission Boulevard (SR-238)/Harder Road**						
NBL		282	484	202	345	4	349
NBT		1,479	2,255	776	1,722	14	1,736
NBR		124	297	173	178	2	180
SBL		58	148	90	86	0	86
SBT		1,109	1,796	687	1,324	19	1,343
SBR		179	326	147	225	0	225
EBL		259	508	249	337	0	337
EBT		103	318	215	170	0	170
EBR		300	589	289	390	5	395
WBL		98	181	83	124	3	127
WBT		113	235	122	151	0	151
WBR		38	70	32	48	0	48
North Leg							
	Approach	1,346	2,270	924	1,635	19	1,654
	Departure	1,776	2,833	1,057	2,106	14	2,121
	Total	3,122	5,103	1,981	3,741	33	3,775
South Leg							
	Approach	1,885	3,036	1,151	2,245	20	2,265
	Departure	1,507	2,566	1,059	1,838	27	1,865
	Total	3,392	5,602	2,210	4,083	47	4,130
East Leg							
	Approach	249	486	237	323	3	326
	Departure	285	763	478	434	2	436
	Total	534	1,249	715	757	5	762
West Leg							
	Approach	662	1,415	753	897	5	902
	Departure	574	1,045	471	721	4	725
	Total	1,236	2,460	1,224	1,619	9	1,627
Total Approaches							
	Approach	4,142	7,207	3,065	5,100	47	5,147
	Departure	4,142	7,207	3,065	5,100	47	5,147
	Total	8,284	14,414	6,130	10,200	94	10,294

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
2	**Mission Boulevard (SR-238)/Tennyson Road**						
NBL		325	526	201	388	11	399
NBT		1,455	2,366	911	1,740	13	1,753
NBR		1	2	1	1	0	1
SBL		32	63	31	42	10	52
SBT		1,032	1,860	828	1,291	18	1,309
SBR		296	487	191	356	0	356
EBL		293	491	198	355	0	355
EBT		3	6	3	4	15	19
EBR		214	392	178	270	14	284
WBL		9	14	5	11	0	11
WBT		12	18	6	14	12	26
WBR		11	16	5	13	8	21
North Leg							
	Approach	1,360	2,410	1,050	1,688	28	1,716
	Departure	1,759	2,873	1,114	2,107	21	2,128
	Total	3,119	5,283	2,164	3,795	49	3,844
South Leg							
	Approach	1,781	2,894	1,113	2,129	24	2,153
	Departure	1,255	2,266	1,011	1,571	32	1,603
	Total	3,036	5,160	2,124	3,700	56	3,756
East Leg							
	Approach	32	48	16	37	20	57
	Departure	36	71	35	47	25	72
	Total	68	119	51	84	45	129
West Leg							
	Approach	510	889	379	628	29	657
	Departure	633	1,031	398	757	23	780
	Total	1,143	1,920	777	1,386	52	1,438
Total Approaches							
	Approach	3,683	6,241	2,558	4,482	101	4,583
	Departure	3,683	6,241	2,558	4,482	101	4,583
	Total	7,366	12,482	5,116	8,965	202	9,167

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
3	**Mission Boulevard (SR-238)/Valle Vista Avenue - Project Driveway**						
NBL		47	109	62	66	0	66
NBT		1,846	2,956	1,110	2,193	0	2,193
NBR		0	0	0	0	43	43
SBL		0	0	0	0	32	32
SBT		1,255	2,225	970	1,558	0	1,558
SBR		39	92	53	56	0	56
EBL		22	28	6	24	0	24
EBT		0	0	0	0	2	2
EBR		52	73	21	59	0	59
WBL		0	0	0	0	33	33
WBT		0	0	0	0	2	2
WBR		0	0	0	0	24	24
North Leg							
	Approach	1,294	2,317	1,023	1,614	32	1,646
	Departure	1,868	2,984	1,116	2,217	24	2,241
	Total	3,162	5,301	2,139	3,830	56	3,886
South Leg							
	Approach	1,893	3,065	1,172	2,259	43	2,302
	Departure	1,307	2,298	991	1,617	33	1,650
	Total	3,200	5,363	2,163	3,876	76	3,952
East Leg							
	Approach	0	0	0	0	59	59
	Departure	0	0	0	0	77	77
	Total	0	0	0	0	136	136
West Leg							
	Approach	74	101	27	82	2	84
	Departure	86	201	115	122	2	124
	Total	160	302	142	204	4	208
Total Approaches							
	Approach	3,261	5,483	2,222	3,955	136	4,091
	Departure	3,261	5,483	2,222	3,955	136	4,091
	Total	6,522	10,966	4,444	7,911	272	8,183

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
4	**Mission Boulevard (SR-238)/Industrial Parkway W**						
NBL		270	672	402	396	0	396
NBT		1,236	2,239	1,003	1,549	21	1,570
NBR		17	23	6	19	0	19
SBL		145	153	8	148	0	148
SBT		902	1,661	759	1,139	16	1,155
SBR		248	474	226	319	17	336
EBL		495	682	187	553	23	576
EBT		182	191	9	185	0	185
EBR		437	797	360	550	0	550
WBL		11	14	3	12	0	12
WBT		117	154	37	129	0	129
WBR		138	145	7	140	0	140
North Leg							
	Approach	1,295	2,288	993	1,605	33	1,638
	Departure	1,869	3,066	1,197	2,243	44	2,287
	Total	3,164	5,354	2,190	3,848	77	3,925
South Leg							
	Approach	1,523	2,934	1,411	1,964	21	1,985
	Departure	1,350	2,472	1,122	1,701	16	1,717
	Total	2,873	5,406	2,533	3,665	37	3,702
East Leg							
	Approach	266	313	47	281	0	281
	Departure	344	367	23	351	0	351
	Total	610	680	70	632	0	632
West Leg							
	Approach	1,114	1,670	556	1,288	23	1,311
	Departure	635	1,300	665	843	17	860
	Total	1,749	2,970	1,221	2,131	40	2,171
Total Approaches							
	Approach	4,198	7,205	3,007	5,138	77	5,215
	Departure	4,198	7,205	3,007	5,138	77	5,215
	Total	8,396	14,410	6,014	10,275	154	10,429

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
5	**Mission Boulevard (SR-238)/Whipple Road**						
NBL		266	378	112	301	0	301
NBT		1,460	2,860	1,400	1,898	14	1,912
NBR		21	46	25	29	0	29
SBL		17	31	14	21	0	21
SBT		760	1,730	970	1,063	11	1,074
SBR		125	150	25	133	1	134
EBL		214	247	33	224	1	225
EBT		16	21	5	18	0	18
EBR		271	430	159	321	0	321
WBL		19	50	31	29	0	29
WBT		8	11	3	9	0	9
WBR		10	19	9	13	0	13
North Leg							
	Approach	902	1,911	1,009	1,217	12	1,229
	Departure	1,684	3,126	1,442	2,135	15	2,150
	Total	2,586	5,037	2,451	3,352	27	3,379
South Leg							
	Approach	1,747	3,284	1,537	2,227	14	2,241
	Departure	1,050	2,210	1,160	1,413	11	1,424
	Total	2,797	5,494	2,697	3,640	25	3,665
East Leg							
	Approach	37	80	43	50	0	50
	Departure	54	98	44	68	0	68
	Total	91	178	87	118	0	118
West Leg							
	Approach	501	698	197	563	1	564
	Departure	399	539	140	443	1	444
	Total	900	1,237	337	1,005	2	1,007
Total Approaches							
	Approach	3,187	5,973	2,786	4,058	27	4,085
	Departure	3,187	5,973	2,786	4,058	27	4,085
	Total	6,374	11,946	5,572	8,115	54	8,169

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
6	**Dixon Street/Valle Vista Avenue**						
NBL		19	21	2	20	0	20
NBT		229	641	412	358	0	358
NBR		34	57	23	41	2	43
SBL		60	66	6	62	0	62
SBT		368	615	247	445	0	445
SBR		10	11	1	10	0	10
EBL		9	11	2	10	0	10
EBT		8	8	0	8	0	8
EBR		10	11	1	10	0	10
WBL		36	91	55	53	2	55
WBT		4	4	0	4	0	4
WBR		33	92	59	51	0	51
North Leg							
	Approach	438	692	254	517	0	517
	Departure	271	744	473	419	0	419
	Total	709	1,436	727	936	0	936
South Leg							
	Approach	282	719	437	419	2	421
	Departure	414	717	303	509	2	511
	Total	696	1,436	740	927	4	931
East Leg							
	Approach	73	187	114	109	2	111
	Departure	102	131	29	111	2	113
	Total	175	318	143	220	4	224
West Leg							
	Approach	27	30	3	28	0	28
	Departure	33	36	3	34	0	34
	Total	60	66	6	62	0	62
Total Approaches							
	Approach	820	1,628	808	1,073	4	1,077
	Departure	820	1,628	808	1,073	4	1,077
	Total	1,640	3,256	1,616	2,145	8	2,153

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
7	**Huntwood Avenue/Tennyson Road**						
NBL		151	200	49	166	0	166
NBT		353	446	93	382	0	382
NBR		228	452	224	298	1	299
SBL		74	124	50	90	4	94
SBT		141	227	86	168	0	168
SBR		51	57	6	53	0	53
EBL		116	121	5	118	0	118
EBT		753	1,229	476	902	25	927
EBR		94	147	53	111	0	111
WBL		195	411	216	263	1	264
WBT		711	1,044	333	815	19	834
WBR		39	55	16	44	3	47
North Leg							
	Approach	266	408	142	310	4	314
	Departure	508	622	114	544	3	547
	Total	774	1,030	256	854	7	861
South Leg							
	Approach	732	1,098	366	846	1	847
	Departure	430	785	355	541	1	542
	Total	1,162	1,883	721	1,387	2	1,389
East Leg							
	Approach	945	1,510	565	1,122	23	1,145
	Departure	1,055	1,805	750	1,289	30	1,319
	Total	2,000	3,315	1,315	2,411	53	2,464
West Leg							
	Approach	963	1,497	534	1,130	25	1,155
	Departure	913	1,301	388	1,034	19	1,053
	Total	1,876	2,798	922	2,164	44	2,208
Total Approaches							
	Approach	2,906	4,513	1,607	3,408	53	3,461
	Departure	2,906	4,513	1,607	3,408	53	3,461
	Total	5,812	9,026	3,214	6,816	106	6,922

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
8	**Huntwood Avenue/Industrial Parkway W**						
NBL		446	611	165	498	0	498
NBT		605	857	252	684	0	684
NBR		298	476	178	354	5	359
SBL		74	138	64	94	1	95
SBT		145	234	89	173	0	173
SBR		96	154	58	114	0	114
EBL		289	378	89	317	0	317
EBT		1,089	1,607	518	1,251	14	1,265
EBR		194	247	53	211	0	211
WBL		117	183	66	138	4	142
WBT		685	1,068	383	805	11	816
WBR		100	161	61	119	1	120
North Leg							
	Approach	315	526	211	381	1	382
	Departure	994	1,396	402	1,120	1	1,121
	Total	1,309	1,922	613	1,501	2	1,503
South Leg							
	Approach	1,349	1,944	595	1,535	5	1,540
	Departure	456	664	208	521	4	525
	Total	1,805	2,608	803	2,056	9	2,065
East Leg							
	Approach	902	1,412	510	1,061	16	1,077
	Departure	1,461	2,221	760	1,699	20	1,719
	Total	2,363	3,633	1,270	2,760	36	2,796
West Leg							
	Approach	1,572	2,232	660	1,778	14	1,792
	Departure	1,227	1,833	606	1,416	11	1,427
	Total	2,799	4,065	1,266	3,195	25	3,220
Total Approaches							
	Approach	4,138	6,114	1,976	4,756	36	4,792
	Departure	4,138	6,114	1,976	4,756	36	4,792
	Total	8,276	12,228	3,952	9,511	72	9,583

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
9	**Ruus Road - Industrial Parkway SW/Industrial Parkway W**						
NBL		171	944	773	413	0	413
NBT		407	806	399	532	0	532
NBR		7	41	34	18	0	18
SBL		25	30	5	27	0	27
SBT		139	342	203	202	0	202
SBR		68	77	9	71	0	71
EBL		62	65	3	63	0	63
EBT		776	1,397	621	970	3	973
EBR		62	232	170	115	0	115
WBL		293	754	461	437	5	442
WBT		926	1,096	170	979	6	985
WBR		55	58	3	56	0	56
North Leg							
	Approach	232	449	217	300	0	300
	Departure	524	929	405	651	0	651
	Total	756	1,378	622	950	0	950
South Leg							
	Approach	585	1,791	1,206	962	0	962
	Departure	494	1,328	834	755	5	760
	Total	1,079	3,119	2,040	1,717	5	1,722
East Leg							
	Approach	1,274	1,908	634	1,472	11	1,483
	Departure	808	1,468	660	1,014	3	1,017
	Total	2,082	3,376	1,294	2,486	14	2,500
West Leg							
	Approach	900	1,694	794	1,148	3	1,151
	Departure	1,165	2,117	952	1,463	6	1,469
	Total	2,065	3,811	1,746	2,611	9	2,620
Total Approaches							
	Approach	2,991	5,842	2,851	3,882	14	3,896
	Departure	2,991	5,842	2,851	3,882	14	3,896
	Total	5,982	11,684	5,702	7,764	28	7,792

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
10	**I-880 Southbound Ramps/Industrial Parkway W**						
NBL		0	0	0	0	0	0
NBT		0	0	0	0	0	0
NBR		0	0	0	0	0	0
SBL		405	517	112	440	0	440
SBT		0	0	0	0	0	0
SBR		261	363	102	293	0	293
EBL		348	440	92	377	0	377
EBT		975	1,733	758	1,212	2	1,214
EBR		0	0	0	0	0	0
WBL		0	0	0	0	0	0
WBT		822	1,592	770	1,063	2	1,065
WBR		217	275	58	235	4	239
North Leg							
	Approach	666	880	214	733	0	733
	Departure	565	715	150	612	4	616
	Total	1,231	1,595	364	1,345	4	1,349
South Leg							
	Approach	0	0	0	0	0	0
	Departure	0	0	0	0	0	0
	Total	0	0	0	0	0	0
East Leg							
	Approach	1,039	1,867	828	1,298	6	1,304
	Departure	1,380	2,250	870	1,652	2	1,654
	Total	2,419	4,117	1,698	2,950	8	2,958
West Leg							
	Approach	1,323	2,173	850	1,589	2	1,591
	Departure	1,083	1,955	872	1,356	2	1,358
	Total	2,406	4,128	1,722	2,944	4	2,948
Total Approaches							
	Approach	3,028	4,920	1,892	3,619	8	3,627
	Departure	3,028	4,920	1,892	3,619	8	3,627
	Total	6,056	9,840	3,784	7,239	16	7,255

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
11	**I-880 Northbound Ramps - Industrial Parkway SW/Whipple Road**						
NBL		185	194	9	188	0	188
NBT		803	844	41	816	5	821
NBR		113	119	6	115	0	115
SBL		240	614	374	357	0	357
SBT		0	0	0	0	0	0
SBR		630	1,102	472	778	5	783
EBL		674	1,228	554	847	6	853
EBT		759	932	173	813	0	813
EBR		0	0	0	0	0	0
WBL		0	0	0	0	0	0
WBT		921	1,104	183	978	0	978
WBR		303	789	486	455	0	455
North Leg							
	Approach	870	1,716	846	1,134	5	1,139
	Departure	1,780	2,861	1,081	2,118	11	2,129
	Total	2,650	4,577	1,927	3,252	16	3,268
South Leg							
	Approach	1,101	1,157	56	1,119	5	1,124
	Departure	0	0	0	0	0	0
	Total	1,101	1,157	56	1,119	5	1,124
East Leg							
	Approach	1,224	1,893	669	1,433	0	1,433
	Departure	1,112	1,665	553	1,285	0	1,285
	Total	2,336	3,558	1,222	2,718	0	2,718
West Leg							
	Approach	1,433	2,160	727	1,660	6	1,666
	Departure	1,736	2,400	664	1,944	5	1,949
	Total	3,169	4,560	1,391	3,604	11	3,615
Total Approaches							
	Approach	4,628	6,926	2,298	5,346	16	5,362
	Departure	4,628	6,926	2,298	5,346	16	5,362
	Total	9,256	13,852	4,596	10,692	32	10,724

Table C-2 - Background (2024) Peak Hour Volume Summary

		PM Peak Hour					
		Existing (2019) Vol	2035 NP Vol	2019-2035 Growth	2024 Without Project	Net Project Trips	2024 With Project
12	**Project Driveway/Tennyson Road**						
NBL		0	0	0	0	20	20
NBT		0	0	0	0	0	0
NBR		0	0	0	0	0	0
SBL		0	0	0	0	0	0
SBT		0	0	0	0	0	0
SBR		0	0	0	0	0	0
EBL		0	0	0	0	0	0
EBT		36	71	35	47	0	47
EBR		0	0	0	0	26	26
WBL		0	0	0	0	0	0
WBT		32	48	16	37	0	37
WBR		0	0	0	0	0	0
North Leg							
	Approach	0	0	0	0	0	0
	Departure	0	0	0	0	0	0
	Total	0	0	0	0	0	0
South Leg							
	Approach	0	0	0	0	20	20
	Departure	0	0	0	0	26	26
	Total	0	0	0	0	46	46
East Leg							
	Approach	32	48	16	37	0	37
	Departure	36	71	35	47	0	47
	Total	68	119	51	84	0	84
West Leg							
	Approach	36	71	35	47	26	73
	Departure	32	48	16	37	20	57
	Total	68	119	51	84	46	130
Total Approaches							
	Approach	68	119	51	84	46	130
	Departure	68	119	51	84	46	130
	Total	136	238	102	168	92	260

APPENDIX E

BACKGROUND AND BACKGROUND PLUS PROJECT LEVEL OF SERVICE CALCULATION WORKSHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	161	356	180	108	37	278	1151	132	41	1721	159
Future Volume (vph)	319	161	356	180	108	37	278	1151	132	41	1721	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5007		1770	5021	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5007		1770	5021	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	358	181	400	202	121	42	312	1293	148	46	1934	179
RTOR Reduction (vph)	0	0	289	0	0	38	0	9	0	0	7	0
Lane Group Flow (vph)	358	181	111	202	121	4	312	1432	0	46	2106	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	17.8	16.5	16.5	12.5	11.2	11.2	25.1	50.2		25.1	50.2	
Effective Green, g (s)	17.8	16.5	16.5	12.5	11.2	11.2	25.1	50.2		25.1	50.2	
Actuated g/C Ratio	0.15	0.14	0.14	0.10	0.09	0.09	0.21	0.41		0.21	0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	503	481	215	353	326	146	366	2072		366	2077	
v/s Ratio Prot	c0.10	0.05		0.06	0.03		c0.18	0.29		0.03	c0.42	
v/s Ratio Perm			c0.07			0.00						
v/c Ratio	0.71	0.38	0.52	0.57	0.37	0.03	0.85	0.69		0.13	1.01	
Uniform Delay, d1	49.3	47.7	48.7	51.9	51.7	50.1	46.3	29.2		39.2	35.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	0.5	2.1	2.2	0.7	0.1	17.2	1.9		0.7	23.3	
Delay (s)	54.0	48.2	50.8	54.1	52.5	50.2	63.5	31.1		39.9	58.8	
Level of Service	D	D	D	D	D	D	E	C		D	E	
Approach Delay (s)		51.5			53.1			36.9			58.4	
Approach LOS		D			D			D			E	

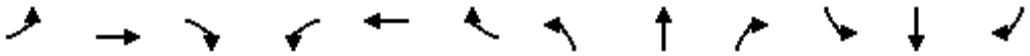
Intersection Summary			
HCM 2000 Control Delay	49.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	121.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	2	306	10	6	0	256	1202	4	11	1857	268
Future Volume (vph)	366	2	306	10	6	0	256	1202	4	11	1857	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00		0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1806		3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1806		3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	370	2	309	10	6	0	259	1214	4	11	1876	271
RTOR Reduction (vph)	0	0	263	0	0	0	0	0	0	0	0	78
Lane Group Flow (vph)	370	2	46	0	16	0	259	1218	0	11	1876	193
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	21.0	21.0	21.0		3.2		16.0	96.8		3.0	83.8	83.8
Effective Green, g (s)	21.0	21.0	21.0		3.2		16.0	96.8		3.0	83.8	83.8
Actuated g/C Ratio	0.15	0.15	0.15		0.02		0.11	0.68		0.02	0.59	0.59
Clearance Time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	507	275	234		40		386	3465		37	3000	934
v/s Ratio Prot	c0.11	0.00			c0.01		c0.08	0.24		0.01	c0.37	
v/s Ratio Perm			0.03									0.12
v/c Ratio	0.73	0.01	0.20		0.40		0.67	0.35		0.30	0.63	0.21
Uniform Delay, d1	57.8	51.6	53.1		68.5		60.5	9.5		68.5	18.9	13.6
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	0.0	0.4		6.4		4.5	0.3		4.5	1.0	0.5
Delay (s)	63.0	51.6	53.5		74.9		65.0	9.7		72.9	19.9	14.1
Level of Service	E	D	D		E		E	A		E	B	B
Approach Delay (s)		58.7			74.9			19.4			19.4	
Approach LOS		E			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	0	48	0	0	0	62	1482	0	0	2210	37
Future Volume (vph)	33	0	48	0	0	0	62	1482	0	0	2210	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.92					1.00	1.00			1.00	
Flt Protected		0.98					0.95	1.00			1.00	
Satd. Flow (prot)		1679					1770	3539			3530	
Flt Permitted		0.98					0.95	1.00			1.00	
Satd. Flow (perm)		1679					1770	3539			3530	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	34	0	50	0	0	0	65	1544	0	0	2302	39
RTOR Reduction (vph)	0	46	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	38	0	0	0	0	65	1544	0	0	2340	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		6.2					7.3	74.2			62.9	
Effective Green, g (s)		6.2					7.3	74.2			62.9	
Actuated g/C Ratio		0.07					0.08	0.83			0.70	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		116					144	2937			2483	
v/s Ratio Prot							0.04	c0.44			c0.66	
v/s Ratio Perm		0.02										
v/c Ratio		0.33					0.45	0.53			0.94	
Uniform Delay, d1		39.6					39.1	2.3			11.7	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		1.7					2.2	0.7			8.9	
Delay (s)		41.3					41.4	3.0			20.5	
Level of Service		D					D	A			C	
Approach Delay (s)		41.3			0.0			4.5			20.5	
Approach LOS		D			A			A			C	

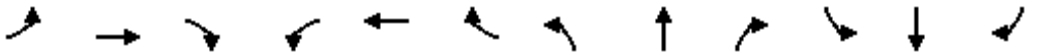
Intersection Summary			
HCM 2000 Control Delay	14.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	89.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	296	142	320	20	214	274	412	969	8	107	1462	666
Future Volume (vph)	296	142	320	20	214	274	412	969	8	107	1462	666
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.92	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3120	1441	1770	3539	1583	3433	5079		1770	4846	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3120	1441	1770	3539	1583	3433	5079		1770	4846	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	305	146	330	21	221	282	425	999	8	110	1507	687
RTOR Reduction (vph)	0	129	129	0	0	234	0	0	0	0	64	0
Lane Group Flow (vph)	305	182	36	21	221	48	425	1007	0	110	2130	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.0	24.4	24.4	1.9	15.3	15.3	15.1	55.5		11.6	52.0	
Effective Green, g (s)	11.0	24.4	24.4	1.9	15.3	15.3	15.1	55.5		11.6	52.0	
Actuated g/C Ratio	0.10	0.22	0.22	0.02	0.14	0.14	0.14	0.50		0.11	0.47	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	342	689	318	30	490	219	469	2553		185	2282	
v/s Ratio Prot	c0.09	0.06		0.01	c0.06		c0.12	0.20		0.06	c0.44	
v/s Ratio Perm			0.03			0.03						
v/c Ratio	0.89	0.26	0.11	0.70	0.45	0.22	0.91	0.39		0.59	0.93	
Uniform Delay, d1	49.1	35.6	34.4	54.0	43.7	42.2	47.0	17.0		47.2	27.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	24.0	0.2	0.2	52.7	0.7	0.5	20.8	0.5		5.1	8.6	
Delay (s)	73.1	35.8	34.5	106.7	44.4	42.7	67.8	17.5		52.2	36.2	
Level of Service	E	D	C	F	D	D	E	B		D	D	
Approach Delay (s)		50.1			46.0			32.4			36.9	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

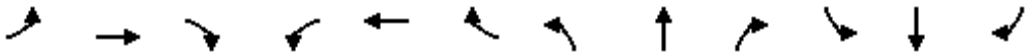
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	12	259	41	16	16	336	837	17	14	1900	110
Future Volume (vph)	147	12	259	41	16	16	336	837	17	14	1900	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1758		3433	5070		1770	5043	
Flt Permitted		0.74	1.00		0.78		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1378	1583		1414		3433	5070		1770	5043	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	155	13	273	43	17	17	354	881	18	15	2000	116
RTOR Reduction (vph)	0	0	217	0	14	0	0	2	0	0	8	0
Lane Group Flow (vph)	0	168	56	0	64	0	354	897	0	15	2108	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		15.4	15.4		15.4		13.2	44.2		2.4	31.4	
Effective Green, g (s)		15.4	15.4		15.4		13.2	44.2		2.4	31.4	
Actuated g/C Ratio		0.21	0.21		0.21		0.18	0.59		0.03	0.42	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		283	325		291		605	2995		56	2116	
v/s Ratio Prot							c0.10	0.18		0.01	c0.42	
v/s Ratio Perm		c0.12	0.04		0.04							
v/c Ratio		0.59	0.17		0.22		0.59	0.30		0.27	1.00	
Uniform Delay, d1		26.9	24.5		24.7		28.3	7.6		35.3	21.6	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.3	0.3		0.4		1.4	0.3		2.6	18.7	
Delay (s)		30.2	24.7		25.1		29.7	7.9		37.9	40.4	
Level of Service		C	C		C		C	A		D	D	
Approach Delay (s)		26.8			25.1			14.0			40.4	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	30.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

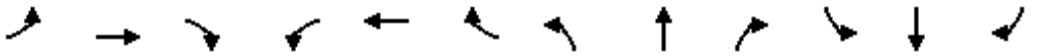
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	2	10	56	0	68	4	416	38	46	408	10
Future Volume (vph)	12	2	10	56	0	68	4	416	38	46	408	10
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
Hourly flow rate (vph)	13	2	11	62	0	75	4	457	42	51	448	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	26	137	503	510
Volume Left (vph)	13	62	4	51
Volume Right (vph)	11	75	42	11
Hadj (s)	-0.12	-0.20	-0.01	0.04
Departure Headway (s)	6.7	6.2	5.1	5.2
Degree Utilization, x	0.05	0.24	0.72	0.73
Capacity (veh/h)	458	511	681	672
Control Delay (s)	10.0	11.2	20.0	20.9
Approach Delay (s)	10.0	11.2	20.0	20.9
Approach LOS	B	B	C	C

Intersection Summary				
Delay	19.1			
Level of Service	C			
Intersection Capacity Utilization	67.8%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	866	120	255	925	56	125	132	156	182	251	51
Future Volume (vph)	46	866	120	255	925	56	125	132	156	182	251	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1815	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.39	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	721	1863	1583	1209	1815	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	47	893	124	263	954	58	129	136	161	188	259	53
RTOR Reduction (vph)	0	0	79	0	0	27	0	0	112	0	6	0
Lane Group Flow (vph)	47	893	45	263	954	31	129	136	49	188	306	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	5.3	36.4	36.4	19.0	50.1	50.1	30.4	30.4	30.4	30.4	30.4	
Effective Green, g (s)	5.3	36.4	36.4	19.0	50.1	50.1	30.4	30.4	30.4	30.4	30.4	
Actuated g/C Ratio	0.05	0.37	0.37	0.19	0.50	0.50	0.31	0.31	0.31	0.31	0.31	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	94	1294	579	337	938	797	220	569	483	369	554	
v/s Ratio Prot	0.03	0.25		c0.15	c0.51			0.07			0.17	
v/s Ratio Perm			0.03			0.02	c0.18		0.03	0.16		
v/c Ratio	0.50	0.69	0.08	0.78	1.02	0.04	0.59	0.24	0.10	0.51	0.55	
Uniform Delay, d1	45.8	26.8	20.6	38.3	24.7	12.5	29.2	25.9	24.8	28.4	28.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.1	1.6	0.1	11.1	33.7	0.1	4.0	0.2	0.1	5.0	3.9	
Delay (s)	49.9	28.4	20.7	49.4	58.4	12.6	33.2	26.1	24.9	33.4	32.8	
Level of Service	D	C	C	D	E	B	C	C	C	C	C	
Approach Delay (s)		28.4			54.5			27.8			33.0	
Approach LOS		C			D			C			C	

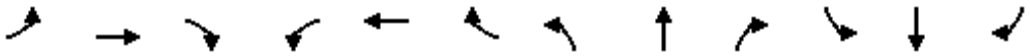
Intersection Summary			
HCM 2000 Control Delay	39.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	99.5	Sum of lost time (s)	13.7
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	535	402	422	1274	47	224	136	115	103	482	130
Future Volume (vph)	95	535	402	422	1274	47	224	136	115	103	482	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5058		1610	3318	1583	1770	3426	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5058		1610	3318	1583	1770	3426	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	102	575	432	454	1370	51	241	146	124	111	518	140
RTOR Reduction (vph)	0	0	308	0	3	0	0	0	101	0	16	0
Lane Group Flow (vph)	102	575	124	454	1418	0	128	259	23	111	642	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	15.3	31.4	31.4	25.0	41.1		20.3	20.3	20.3	15.0	15.0	
Effective Green, g (s)	15.3	31.4	31.4	25.0	41.1		20.3	20.3	20.3	15.0	15.0	
Actuated g/C Ratio	0.14	0.29	0.29	0.23	0.37		0.19	0.19	0.19	0.14	0.14	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	246	1012	453	403	1895		297	613	292	242	468	
v/s Ratio Prot	0.06	0.16		c0.26	c0.28		c0.08	0.08		0.06	c0.19	
v/s Ratio Perm			0.08						0.01			
v/c Ratio	0.41	0.57	0.27	1.13	0.75		0.43	0.42	0.08	0.46	1.37	
Uniform Delay, d1	43.1	33.4	30.3	42.4	29.8		39.6	39.5	37.0	43.6	47.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.7	0.3	83.9	1.7		1.0	0.5	0.1	1.4	180.1	
Delay (s)	44.2	34.1	30.6	126.3	31.5		40.6	40.0	37.1	45.0	227.4	
Level of Service	D	C	C	F	C		D	D	D	D	F	
Approach Delay (s)		33.7			54.4			39.4			201.1	
Approach LOS		C			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	73.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

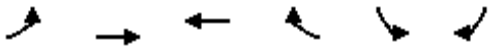
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	721	125	545	1097	32	234	123	38	43	460	110
Future Volume (vph)	27	721	125	545	1097	32	234	123	38	43	460	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3461		1770	3539	1583	1770	1797		1770	1809	
Flt Permitted	0.19	1.00		0.28	1.00	1.00	0.19	1.00		0.60	1.00	
Satd. Flow (perm)	355	3461		520	3539	1583	347	1797		1123	1809	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	759	132	574	1155	34	246	129	40	45	484	116
RTOR Reduction (vph)	0	18	0	0	0	13	0	14	0	0	11	0
Lane Group Flow (vph)	28	873	0	574	1155	21	246	155	0	45	589	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	219	2141		321	2189	979	93	482		301	486	
v/s Ratio Prot		0.25			0.33			0.09			0.33	
v/s Ratio Perm	0.08			c1.10		0.01	c0.71			0.04		
v/c Ratio	0.13	0.41		1.79	0.53	0.02	2.65	0.32		0.15	1.21	
Uniform Delay, d1	6.3	7.8		15.2	8.6	5.9	29.2	23.4		22.3	29.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		367.0	0.2	0.0	770.2	1.8		1.0	113.2	
Delay (s)	6.6	7.9		382.2	8.9	5.9	799.5	25.2		23.3	142.5	
Level of Service	A	A		F	A	A	F	C		C	F	
Approach Delay (s)		7.9			130.4			484.2			134.2	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	140.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.04		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.0%	ICU Level of Service	H
Analysis Period (min)	15		

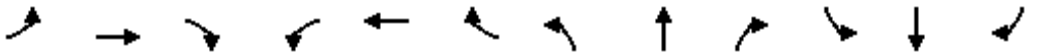
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	172	717	1240	524	296	383
Future Volume (vph)	172	717	1240	524	296	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	179	747	1292	546	308	399
RTOR Reduction (vph)	0	0	0	134	0	270
Lane Group Flow (vph)	179	747	1292	412	308	129
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	15.0	56.0	36.8	36.8	31.0	31.0
Effective Green, g (s)	15.0	56.0	36.8	36.8	31.0	31.0
Actuated g/C Ratio	0.16	0.58	0.38	0.38	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	276	2062	1355	606	570	510
v/s Ratio Prot	c0.10	0.21	c0.37		c0.17	
v/s Ratio Perm				0.26		0.08
v/c Ratio	0.65	0.36	0.95	0.68	0.54	0.25
Uniform Delay, d1	38.1	10.6	28.8	24.7	26.7	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.5	14.7	3.1	3.6	1.2
Delay (s)	43.2	11.1	43.5	27.9	30.4	25.2
Level of Service	D	B	D	C	C	C
Approach Delay (s)		17.3	38.9		27.4	
Approach LOS		B	D		C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	13.3
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

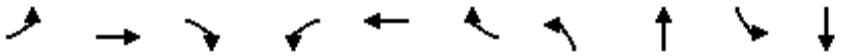
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	365	789	0	0	915	209	537	569	328	432	0	1053
Future Volume (vph)	365	789	0	0	915	209	537	569	328	432	0	1053
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1762	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1762	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	372	805	0	0	934	213	548	618	335	441	0	1074
RTOR Reduction (vph)	0	0	0	0	0	170	0	0	72	0	0	97
Lane Group Flow (vph)	372	805	0	0	934	43	493	673	263	441	0	977
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	40.9	40.9	40.9	23.1		39.7
Effective Green, g (s)	11.7	40.6			24.2	24.2	40.9	40.9	40.9	23.1		39.7
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.34	0.34	0.34	0.19		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	572	600	539	340		922
v/s Ratio Prot	0.11	0.23			c0.18		0.29	c0.38		c0.25		c0.35
v/s Ratio Perm						0.03			0.17			
v/c Ratio	1.11	0.67			0.91	0.13	0.86	1.12	0.49	1.30		1.06
Uniform Delay, d1	54.1	34.0			46.8	39.3	36.9	39.5	31.3	48.5		40.1
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	83.5	3.0			13.5	0.9	12.7	75.0	0.7	153.8		46.7
Delay (s)	137.7	37.0			60.3	40.2	49.6	114.5	32.0	202.2		86.9
Level of Service	F	D			E	D	D	F	C	F		F
Approach Delay (s)		68.8			56.6			74.8			120.5	
Approach LOS		E			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	82.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	358	181	400	202	121	42	312	1441	46	2113
v/c Ratio	0.71	0.38	0.79	0.57	0.37	0.19	0.85	0.69	0.13	1.01
Control Delay	58.1	50.0	22.3	59.2	55.2	3.9	69.4	32.0	42.9	59.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.1	50.0	22.3	59.2	55.2	3.9	69.4	32.0	42.9	59.1
Queue Length 50th (ft)	136	68	47	77	47	0	232	321	29	582
Queue Length 95th (ft)	199	106	162	124	81	7	#444	447	70	#849
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	709	731	592	709	731	388	366	2080	366	2082
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.25	0.68	0.28	0.17	0.11	0.85	0.69	0.13	1.01

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

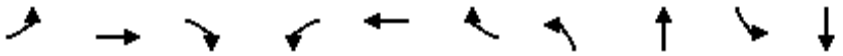
Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	370	2	309	16	259	1218	11	1876	271
v/c Ratio	0.73	0.01	0.62	0.18	0.67	0.33	0.13	0.61	0.26
Control Delay	66.4	49.5	11.2	68.9	68.9	9.7	68.0	20.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	49.5	11.2	68.9	68.9	9.7	68.0	20.4	5.9
Queue Length 50th (ft)	169	2	0	15	120	106	10	349	27
Queue Length 95th (ft)	221	10	89	40	162	247	31	550	93
Internal Link Dist (ft)		523		508		721		258	
Turn Bay Length (ft)	470				510		235		
Base Capacity (vph)	580	314	524	139	701	3636	361	3083	1034
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.01	0.59	0.12	0.37	0.33	0.03	0.61	0.26

Intersection Summary

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	84	65	1544	2341
v/c Ratio	0.45	0.37	0.51	0.91
Control Delay	28.0	44.4	3.2	20.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.0	44.4	3.2	20.6
Queue Length 50th (ft)	19	35	103	581
Queue Length 95th (ft)	64	76	164	#951
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	236	1016	3007	2584
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.06	0.51	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	305	311	165	21	221	282	425	1007	110	2194
v/c Ratio	0.87	0.37	0.37	0.26	0.52	0.66	0.89	0.39	0.58	0.91
Control Delay	73.5	18.2	8.3	59.0	49.1	14.1	68.1	17.2	58.4	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.5	18.2	8.3	59.0	49.1	14.1	68.1	17.2	58.4	32.0
Queue Length 50th (ft)	108	43	0	14	76	6	151	149	73	477
Queue Length 95th (ft)	#197	92	61	43	115	85	#254	212	133	#657
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	350	1014	531	82	820	575	477	2611	246	2399
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.31	0.31	0.26	0.27	0.49	0.89	0.39	0.45	0.91

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	168	273	77	354	899	15	2116
v/c Ratio	0.59	0.50	0.25	0.58	0.28	0.05	1.00
Control Delay	36.0	7.0	22.2	32.1	7.6	27.3	43.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.0	7.0	22.2	32.1	7.6	27.3	43.3
Queue Length 50th (ft)	71	0	23	78	50	6	339
Queue Length 95th (ft)	129	57	57	112	129	22	#536
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	313	570	334	826	3196	378	2121
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.48	0.23	0.43	0.28	0.04	1.00

Intersection Summary

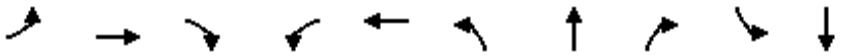
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	47	893	124	263	954	58	129	136	161	188	312
v/c Ratio	0.32	0.71	0.19	0.77	1.00	0.07	0.58	0.24	0.27	0.50	0.55
Control Delay	50.8	31.1	4.8	53.6	55.5	4.4	44.2	29.4	6.3	36.1	33.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	31.1	4.8	53.6	55.5	4.4	44.2	29.4	6.3	36.1	33.9
Queue Length 50th (ft)	28	250	0	153	~671	1	66	62	0	94	154
Queue Length 95th (ft)	70	343	37	271	#971	21	#177	135	51	200	295
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	457	1647	803	457	953	837	223	578	602	375	569
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.54	0.15	0.58	1.00	0.07	0.58	0.24	0.27	0.50	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	102	575	432	454	1421	128	259	124	111	658
v/c Ratio	0.41	0.57	0.57	1.12	0.75	0.43	0.42	0.31	0.46	1.36
Control Delay	50.1	35.7	6.1	123.4	32.6	45.8	42.7	9.5	51.8	210.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.1	35.7	6.1	123.4	32.6	45.8	42.7	9.5	51.8	210.0
Queue Length 50th (ft)	68	180	0	~378	310	90	91	0	74	~322
Queue Length 95th (ft)	127	241	75	#610	381	161	138	51	138	#467
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	404	1808	1020	404	2588	485	999	563	242	485
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.32	0.42	1.12	0.55	0.26	0.26	0.22	0.46	1.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

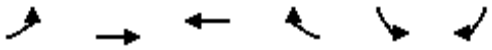
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	891	574	1155	34	246	169	45	600
v/c Ratio	0.13	0.41	1.79	0.53	0.03	2.67	0.34	0.15	1.21
Control Delay	8.1	8.0	386.5	9.7	2.3	801.4	23.1	24.0	139.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	8.0	386.5	9.7	2.3	801.4	23.1	24.0	139.7
Queue Length 50th (ft)	5	101	~279	153	0	~211	60	17	~368
Queue Length 95th (ft)	17	136	#474	202	10	#315	112	43	#566
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	220	2159	321	2189	992	92	496	301	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.41	1.79	0.53	0.03	2.67	0.34	0.15	1.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	179	747	1292	546	308	399
v/c Ratio	0.65	0.36	0.95	0.74	0.54	0.51
Control Delay	48.7	11.2	46.1	23.1	31.0	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	11.2	46.1	23.1	31.0	5.1
Queue Length 50th (ft)	104	117	396	172	153	0
Queue Length 95th (ft)	163	154	#613	#379	238	64
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	460	2143	1356	740	570	780
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.35	0.95	0.74	0.54	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	372	805	934	213	493	673	335	441	1074
v/c Ratio	1.11	0.67	0.91	0.44	0.86	1.12	0.55	1.30	1.06
Control Delay	132.7	37.4	60.6	8.3	53.4	112.3	25.0	193.2	79.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	132.7	37.4	60.6	8.3	53.4	112.3	25.0	193.2	79.4
Queue Length 50th (ft)	~170	279	261	0	372	~631	140	~436	~473
Queue Length 95th (ft)	#269	351	#339	64	#572	#874	236	#639	#621
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	489	572	600	611	340	1014
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.67	0.91	0.44	0.86	1.12	0.55	1.30	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	337	170	390	124	151	48	345	1722	178	86	1324	225
Future Volume (vph)	337	170	390	124	151	48	345	1722	178	86	1324	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5014		1770	4974	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5014		1770	4974	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	379	191	438	139	170	54	388	1935	200	97	1488	253
RTOR Reduction (vph)	0	0	313	0	0	49	0	8	0	0	15	0
Lane Group Flow (vph)	379	191	125	139	170	5	388	2127	0	97	1726	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	18.6	19.5	19.5	10.4	11.3	11.3	25.1	50.1		25.1	50.1	
Effective Green, g (s)	18.6	19.5	19.5	10.4	11.3	11.3	25.1	50.1		25.1	50.1	
Actuated g/C Ratio	0.15	0.16	0.16	0.09	0.09	0.09	0.21	0.41		0.21	0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	522	565	252	292	327	146	363	2057		363	2040	
v/s Ratio Prot	c0.11	0.05		0.04	0.05		c0.22	c0.42		0.05	0.35	
v/s Ratio Perm			c0.08			0.00						
v/c Ratio	0.73	0.34	0.49	0.48	0.52	0.03	1.07	1.03		0.27	0.85	
Uniform Delay, d1	49.3	45.6	46.8	53.3	52.8	50.4	48.5	36.0		40.8	32.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	0.4	1.5	1.2	1.4	0.1	66.7	29.3		1.8	4.5	
Delay (s)	54.3	45.9	48.3	54.5	54.2	50.5	115.2	65.3		42.6	37.1	
Level of Service	D	D	D	D	D	D	F	E		D	D	
Approach Delay (s)		50.1			53.8			73.0			37.4	
Approach LOS		D			D			E			D	

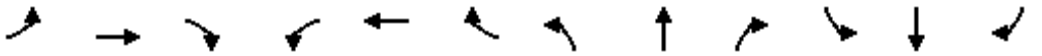
Intersection Summary			
HCM 2000 Control Delay	56.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	122.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	4	270	11	14	13	388	1740	1	42	1291	356
Future Volume (vph)	355	4	270	11	14	13	388	1740	1	42	1291	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1823	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1823	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	359	4	273	11	14	13	392	1758	1	42	1304	360
RTOR Reduction (vph)	0	0	233	0	0	13	0	0	0	0	0	165
Lane Group Flow (vph)	359	4	40	0	25	0	392	1759	0	42	1304	195
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	20.7	20.7	20.7		5.1	5.1	21.4	90.5		7.7	76.8	76.8
Effective Green, g (s)	20.7	20.7	20.7		5.1	5.1	21.4	90.5		7.7	76.8	76.8
Actuated g/C Ratio	0.15	0.15	0.15		0.04	0.04	0.15	0.64		0.05	0.54	0.54
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	500	271	230		65	56	517	3240		95	2750	856
v/s Ratio Prot	c0.10	0.00			c0.01		c0.11	c0.35		0.02	0.26	
v/s Ratio Perm			0.03			0.00						0.12
v/c Ratio	0.72	0.01	0.17		0.38	0.01	0.76	0.54		0.44	0.47	0.23
Uniform Delay, d1	57.9	51.9	53.1		66.9	66.0	57.8	14.3		65.1	20.1	17.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.9	0.0	0.4		3.8	0.1	6.3	0.7		3.3	0.6	0.6
Delay (s)	62.8	51.9	53.5		70.7	66.1	64.1	14.9		68.3	20.7	17.7
Level of Service	E	D	D		E	E	E	B		E	C	B
Approach Delay (s)		58.7			69.1			23.9			21.3	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	0	59	0	0	0	66	2193	0	0	1558	56
Future Volume (vph)	24	0	59	0	0	0	66	2193	0	0	1558	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.90					1.00	1.00			0.99	
Flt Protected		0.99					0.95	1.00			1.00	
Satd. Flow (prot)		1660					1770	3539			3521	
Flt Permitted		0.99					0.95	1.00			1.00	
Satd. Flow (perm)		1660					1770	3539			3521	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	0	61	0	0	0	69	2284	0	0	1623	58
RTOR Reduction (vph)	0	57	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	29	0	0	0	0	69	2284	0	0	1680	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		5.8					7.3	73.0			61.7	
Effective Green, g (s)		5.8					7.3	73.0			61.7	
Actuated g/C Ratio		0.07					0.08	0.83			0.70	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		109					147	2942			2474	
v/s Ratio Prot							0.04	c0.65			0.48	
v/s Ratio Perm		0.02										
v/c Ratio		0.27					0.47	0.78			0.68	
Uniform Delay, d1		39.0					38.4	3.5			7.4	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		1.3					2.4	2.1			1.5	
Delay (s)		40.3					40.8	5.6			8.9	
Level of Service		D					D	A			A	
Approach Delay (s)		40.3			0.0			6.6			8.9	
Approach LOS		D			A			A			A	

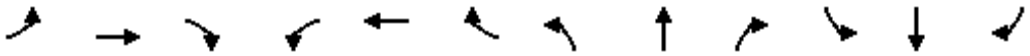
Intersection Summary			
HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	87.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	553	185	550	12	129	140	396	1549	19	148	1139	319
Future Volume (vph)	553	185	550	12	129	140	396	1549	19	148	1139	319
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3086	1441	1770	3539	1583	3433	5076		1770	4918	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3086	1441	1770	3539	1583	3433	5076		1770	4918	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	570	191	567	12	133	144	408	1597	20	153	1174	329
RTOR Reduction (vph)	0	202	202	0	0	122	0	1	0	0	52	0
Lane Group Flow (vph)	570	273	81	12	133	22	408	1616	0	153	1451	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.0	22.1	22.1	0.8	11.9	11.9	8.0	29.0		8.0	29.0	
Effective Green, g (s)	11.0	22.1	22.1	0.8	11.9	11.9	8.0	29.0		8.0	29.0	
Actuated g/C Ratio	0.14	0.29	0.29	0.01	0.15	0.15	0.10	0.38		0.10	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	491	886	414	18	547	244	357	1914		184	1854	
v/s Ratio Prot	c0.17	c0.09		0.01	0.04		c0.12	c0.32		0.09	c0.30	
v/s Ratio Perm			0.06			0.01						
v/c Ratio	1.16	0.31	0.20	0.67	0.24	0.09	1.14	0.84		0.83	0.78	
Uniform Delay, d1	33.0	21.4	20.7	37.9	28.5	27.9	34.5	21.9		33.8	21.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	93.0	0.2	0.2	66.1	0.2	0.2	92.4	4.8		26.1	3.4	
Delay (s)	125.9	21.6	20.9	104.0	28.8	28.0	126.8	26.7		59.9	24.5	
Level of Service	F	C	C	F	C	C	F	C		E	C	
Approach Delay (s)		66.3			31.5			46.8			27.8	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	44.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

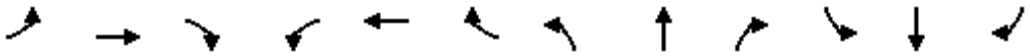
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	18	321	29	9	13	301	1898	29	21	1063	133
Future Volume (vph)	224	18	321	29	9	13	301	1898	29	21	1063	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1780	1583		1747		3433	5074		1770	5000	
Flt Permitted		0.70	1.00		0.72		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1309	1583		1300		3433	5074		1770	5000	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	236	19	338	31	9	14	317	1998	31	22	1119	140
RTOR Reduction (vph)	0	0	264	0	11	0	0	1	0	0	19	0
Lane Group Flow (vph)	0	255	74	0	43	0	317	2028	0	22	1240	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		12.6	43.2		2.4	31.0	
Effective Green, g (s)		16.4	16.4		16.4		12.6	43.2		2.4	31.0	
Actuated g/C Ratio		0.22	0.22		0.22		0.17	0.58		0.03	0.41	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		287	347		285		578	2930		56	2072	
v/s Ratio Prot							c0.09	c0.40		0.01	0.25	
v/s Ratio Perm		c0.19	0.05		0.03							
v/c Ratio		0.89	0.21		0.15		0.55	0.69		0.39	0.60	
Uniform Delay, d1		28.3	23.9		23.6		28.5	11.1		35.5	17.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		26.4	0.3		0.2		1.1	1.4		4.5	1.3	
Delay (s)		54.8	24.2		23.8		29.6	12.5		40.0	18.3	
Level of Service		D	C		C		C	B		D	B	
Approach Delay (s)		37.4			23.8			14.8			18.7	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

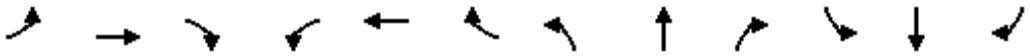
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	8	10	53	4	51	20	358	41	62	445	10
Future Volume (vph)	10	8	10	53	4	51	20	358	41	62	445	10
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
Hourly flow rate (vph)	11	9	11	58	4	56	22	393	45	68	489	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	31	118	460	568
Volume Left (vph)	11	58	22	68
Volume Right (vph)	11	56	45	11
Hadj (s)	-0.11	-0.15	-0.02	0.05
Departure Headway (s)	6.7	6.3	5.1	5.1
Degree Utilization, x	0.06	0.21	0.66	0.80
Capacity (veh/h)	469	511	674	699
Control Delay (s)	10.1	11.0	17.4	25.1
Approach Delay (s)	10.1	11.0	17.4	25.1
Approach LOS	B	B	C	D

Intersection Summary				
Delay	20.3			
Level of Service	C			
Intersection Capacity Utilization	63.1%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	902	111	263	815	44	166	382	298	90	168	53
Future Volume (vph)	118	902	111	263	815	44	166	382	298	90	168	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1795	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.49	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	920	1863	1583	464	1795	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	122	930	114	271	840	45	171	394	307	93	173	55
RTOR Reduction (vph)	0	0	70	0	0	24	0	0	218	0	10	0
Lane Group Flow (vph)	122	930	44	271	840	21	171	394	89	93	218	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	12.5	39.9	39.9	20.0	47.4	47.4	30.1	30.1	30.1	30.1	30.1	
Effective Green, g (s)	12.5	39.9	39.9	20.0	47.4	47.4	30.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.12	0.38	0.38	0.19	0.46	0.46	0.29	0.29	0.29	0.29	0.29	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	213	1361	609	341	851	723	267	540	459	134	521	
v/s Ratio Prot	0.07	0.26		c0.15	c0.45			c0.21			0.12	
v/s Ratio Perm			0.03			0.01	0.19		0.06	0.20		
v/c Ratio	0.57	0.68	0.07	0.79	0.99	0.03	0.64	0.73	0.19	0.69	0.42	
Uniform Delay, d1	43.1	26.6	20.2	39.9	27.8	15.5	32.1	33.1	27.7	32.7	29.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	1.4	0.1	12.0	27.9	0.1	5.2	4.9	0.2	25.7	2.5	
Delay (s)	46.8	28.1	20.2	51.9	55.7	15.6	37.2	38.0	27.9	58.4	32.2	
Level of Service	D	C	C	D	E	B	D	D	C	E	C	
Approach Delay (s)		29.3			53.3			34.3			39.8	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	13.7
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	1251	211	138	805	119	498	684	354	94	173	114
Future Volume (vph)	317	1251	211	138	805	119	498	684	354	94	173	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4987		1610	3366	1583	1770	3328	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4987		1610	3366	1583	1770	3328	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	341	1345	227	148	866	128	535	735	381	101	186	123
RTOR Reduction (vph)	0	0	83	0	14	0	0	0	213	0	76	0
Lane Group Flow (vph)	341	1345	144	148	980	0	412	858	168	101	233	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.1	56.2	56.2	16.7	47.8		33.1	33.1	33.1	13.5	13.5	
Effective Green, g (s)	25.1	56.2	56.2	16.7	47.8		33.1	33.1	33.1	13.5	13.5	
Actuated g/C Ratio	0.18	0.41	0.41	0.12	0.35		0.24	0.24	0.24	0.10	0.10	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	323	1446	647	214	1733		387	810	381	173	326	
v/s Ratio Prot	c0.19	c0.38		0.08	0.20		c0.26	0.25		0.06	c0.07	
v/s Ratio Perm			0.09						0.11			
v/c Ratio	1.06	0.93	0.22	0.69	0.57		1.06	1.06	0.44	0.58	0.72	
Uniform Delay, d1	56.2	38.8	26.4	57.9	36.4		52.2	52.2	44.3	59.3	60.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	65.5	10.9	0.2	9.3	0.4		63.9	48.5	0.8	4.9	7.3	
Delay (s)	121.7	49.7	26.6	67.2	36.8		116.1	100.7	45.1	64.3	67.4	
Level of Service	F	D	C	E	D		F	F	D	E	E	
Approach Delay (s)		59.8			40.8			91.7			66.6	
Approach LOS		E			D			F			E	

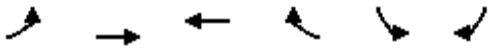
Intersection Summary			
HCM 2000 Control Delay	66.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	137.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	970	115	437	979	56	413	532	18	27	202	71
Future Volume (vph)	63	970	115	437	979	56	413	532	18	27	202	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	3539	1583	1770	1854		1770	1790	
Flt Permitted	0.23	1.00		0.19	1.00	1.00	0.40	1.00		0.19	1.00	
Satd. Flow (perm)	427	3483		362	3539	1583	751	1854		347	1790	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	66	1021	121	460	1031	59	435	560	19	28	213	75
RTOR Reduction (vph)	0	11	0	0	0	22	0	1	0	0	16	0
Lane Group Flow (vph)	66	1131	0	460	1031	37	435	578	0	28	272	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	264	2155		223	2189	979	201	498		93	481	
v/s Ratio Prot		0.32			0.29			0.31			0.15	
v/s Ratio Perm	0.15			c1.27		0.02	c0.58			0.08		
v/c Ratio	0.25	0.52		2.06	0.47	0.04	2.16	1.16		0.30	0.57	
Uniform Delay, d1	6.9	8.6		15.2	8.2	6.0	29.2	29.2		23.3	25.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		493.4	0.2	0.0	540.0	92.3		8.1	4.8	
Delay (s)	7.4	8.8		508.7	8.4	6.0	569.3	121.6		31.4	30.0	
Level of Service	A	A		F	A	A	F	F		C	C	
Approach Delay (s)		8.8			156.8			313.6			30.1	
Approach LOS		A			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	142.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.08		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		

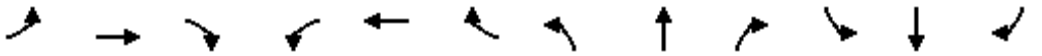
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	377	1212	1063	235	440	293
Future Volume (vph)	377	1212	1063	235	440	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	393	1262	1107	245	458	305
RTOR Reduction (vph)	0	0	0	80	0	208
Lane Group Flow (vph)	393	1263	1107	165	458	97
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	24.0	57.8	29.6	29.6	31.0	31.0
Effective Green, g (s)	24.0	57.8	29.6	29.6	31.0	31.0
Actuated g/C Ratio	0.25	0.59	0.30	0.30	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	2089	1070	478	560	501
v/s Ratio Prot	c0.22	0.36	c0.31		c0.26	
v/s Ratio Perm				0.10		0.06
v/c Ratio	0.91	0.60	1.03	0.35	0.82	0.19
Uniform Delay, d1	35.9	12.8	34.2	26.6	30.8	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.3	1.3	36.8	0.4	12.5	0.9
Delay (s)	58.2	14.1	71.0	27.0	43.4	25.2
Level of Service	E	B	E	C	D	C
Approach Delay (s)		24.5	63.0		36.1	
Approach LOS		C	E		D	

Intersection Summary			
HCM 2000 Control Delay	40.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	13.3
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

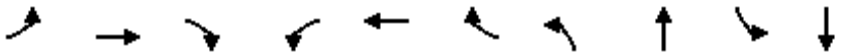
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	847	813	0	0	978	455	188	816	115	357	0	778
Future Volume (vph)	847	813	0	0	978	455	188	816	115	357	0	778
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	864	830	0	0	998	464	192	887	117	364	0	794
RTOR Reduction (vph)	0	0	0	0	0	192	0	0	63	0	0	455
Lane Group Flow (vph)	864	830	0	0	998	272	173	906	54	364	0	339
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Effective Green, g (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.38	0.38	0.38	0.13		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	632	665	595	224		915
v/s Ratio Prot	c0.25	0.23			c0.20		0.10	c0.51		c0.21		0.12
v/s Ratio Perm						0.17			0.03			
v/c Ratio	1.54	0.62			1.10	0.96	0.27	1.36	0.09	1.62		0.37
Uniform Delay, d1	54.4	32.8			53.4	53.0	28.2	40.5	26.2	56.8		33.4
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	250.7	2.2			61.2	45.1	0.2	172.7	0.1	300.8		0.3
Delay (s)	305.0	35.0			114.6	98.1	28.4	213.2	26.3	357.5		33.6
Level of Service	F	C			F	F	C	F	C	F		C
Approach Delay (s)		172.7			109.4			168.2			135.4	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	147.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	121.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

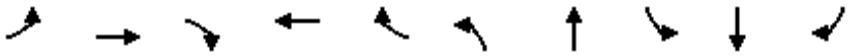


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	379	191	438	139	170	54	388	2135	97	1741
v/c Ratio	0.72	0.34	0.78	0.47	0.52	0.25	1.07	1.03	0.27	0.85
Control Delay	57.9	47.3	19.0	59.5	59.3	7.9	113.6	64.8	44.7	37.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	47.3	19.0	59.5	59.3	7.9	113.6	64.8	44.7	37.5
Queue Length 50th (ft)	148	71	45	54	68	0	~338	~658	65	441
Queue Length 95th (ft)	204	108	164	91	108	21	#579	#836	124	563
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	704	728	622	704	726	386	363	2065	363	2056
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.26	0.70	0.20	0.23	0.14	1.07	1.03	0.27	0.85

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



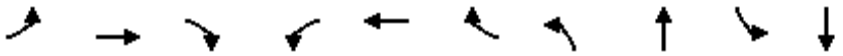
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	359	4	273	25	13	392	1759	42	1304	360
v/c Ratio	0.72	0.01	0.59	0.26	0.08	0.76	0.53	0.38	0.47	0.35
Control Delay	66.0	49.8	11.2	70.4	0.9	67.3	15.9	73.0	21.8	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	49.8	11.2	70.4	0.9	67.3	15.9	73.0	21.8	3.1
Queue Length 50th (ft)	163	3	0	23	0	181	342	38	279	0
Queue Length 95th (ft)	214	15	83	53	0	229	445	78	371	57
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	494	141	201	701	3325	361	2804	1034
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.01	0.55	0.18	0.06	0.56	0.53	0.12	0.47	0.35

Intersection Summary

Queues
3: Mission Blvd & Valle Vista Ave

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	86	69	2284	1681
v/c Ratio	0.44	0.38	0.76	0.65
Control Delay	24.3	44.3	6.1	10.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.3	44.3	6.1	10.3
Queue Length 50th (ft)	13	37	231	265
Queue Length 95th (ft)	59	80	401	427
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	249	1043	3018	2581
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.35	0.07	0.76	0.65

Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	570	475	283	12	133	144	408	1617	153	1503
v/c Ratio	1.11	0.42	0.45	0.12	0.32	0.37	1.09	0.81	0.80	0.76
Control Delay	106.2	9.7	5.7	37.2	31.8	3.5	109.0	24.2	63.8	21.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	106.2	9.7	5.7	37.2	31.8	3.5	109.0	24.2	63.8	21.4
Queue Length 50th (ft)	~154	34	0	5	30	0	~108	230	69	196
Queue Length 95th (ft)	#268	82	61	22	54	8	#207	318	#176	276
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	513	1502	786	96	1202	689	373	2001	192	1988
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.32	0.36	0.13	0.11	0.21	1.09	0.81	0.80	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	255	338	54	317	2029	22	1259
v/c Ratio	0.89	0.55	0.18	0.55	0.65	0.08	0.60
Control Delay	62.0	7.0	20.4	32.0	12.2	27.6	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	7.0	20.4	32.0	12.2	27.6	18.6
Queue Length 50th (ft)	114	0	15	71	172	9	157
Queue Length 95th (ft)	#240	62	43	103	#396	28	219
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	297	620	306	826	3133	378	2089
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.55	0.18	0.38	0.65	0.06	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	122	930	114	271	840	45	171	394	307	93	228
v/c Ratio	0.57	0.68	0.17	0.80	0.99	0.06	0.64	0.73	0.45	0.69	0.43
Control Delay	54.4	30.2	4.8	57.8	57.3	3.7	46.6	43.6	6.0	63.4	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.4	30.2	4.8	57.8	57.3	3.7	46.6	43.6	6.0	63.4	32.3
Queue Length 50th (ft)	75	267	0	166	~542	0	95	225	0	52	110
Queue Length 95th (ft)	142	361	36	279	#873	16	#216	#418	67	#157	209
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	428	1541	753	428	850	753	267	540	677	134	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.60	0.15	0.63	0.99	0.06	0.64	0.73	0.45	0.69	0.43

Intersection Summary

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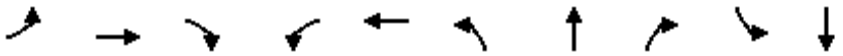
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	341	1345	227	148	994	412	858	381	101	309
v/c Ratio	1.06	0.93	0.31	0.69	0.57	1.06	1.06	0.64	0.58	0.77
Control Delay	119.7	51.7	12.4	74.7	37.0	113.7	98.3	18.5	74.2	57.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	15.6	17.2	1.4	0.0	0.0
Total Delay	119.7	51.7	12.4	74.7	37.0	129.3	115.4	20.0	74.2	57.6
Queue Length 50th (ft)	~340	609	49	130	262	~453	~471	76	88	104
Queue Length 95th (ft)	#573	#828	120	206	308	#729	#655	204	158	166
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	322	1444	729	322	2049	387	809	594	193	438
Starvation Cap Reductn	0	0	0	0	0	86	201	84	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.93	0.31	0.46	0.49	1.37	1.41	0.75	0.52	0.71

Intersection Summary

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Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	1142	460	1031	59	435	579	28	288
v/c Ratio	0.25	0.53	2.05	0.47	0.06	2.16	1.16	0.30	0.58
Control Delay	9.9	9.5	507.9	9.1	2.0	561.2	122.2	33.8	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.9	9.5	507.9	9.1	2.0	561.2	122.2	33.8	28.8
Queue Length 50th (ft)	13	147	~259	130	0	~353	~349	11	115
Queue Length 95th (ft)	36	195	#440	172	13	#526	#546	36	193
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	264	2166	224	2189	1001	201	499	92	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.53	2.05	0.47	0.06	2.16	1.16	0.30	0.58

Intersection Summary

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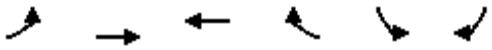
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	393	1263	1107	245	458	305
v/c Ratio	0.91	0.60	1.04	0.44	0.82	0.43
Control Delay	62.0	14.3	71.9	17.4	44.5	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	14.3	71.9	17.4	44.5	5.0
Queue Length 50th (ft)	236	244	~403	63	263	0
Queue Length 95th (ft)	#401	308	#532	135	#426	58
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	452	2105	1069	558	560	710
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.60	1.04	0.44	0.82	0.43

Intersection Summary

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95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	864	830	998	464	173	906	117	364	794
v/c Ratio	1.54	0.62	1.10	0.98	0.27	1.36	0.18	1.62	0.58
Control Delay	287.3	35.3	110.2	62.9	29.7	206.2	7.4	336.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	287.3	35.3	110.2	62.9	29.7	206.2	7.4	336.5	7.3
Queue Length 50th (ft)	~525	296	~349	214	106	~1056	8	~441	39
Queue Length 95th (ft)	#654	365	#442	#438	167	#1322	49	#637	100
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	474	632	665	658	224	1366
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.54	0.62	1.10	0.98	0.27	1.36	0.18	1.63	0.58

Intersection Summary

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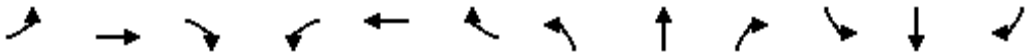
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	161	359	182	108	37	283	1170	135	41	1732	159
Future Volume (vph)	319	161	359	182	108	37	283	1170	135	41	1732	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5006		1770	5021	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5006		1770	5021	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	358	181	403	204	121	42	318	1315	152	46	1946	179
RTOR Reduction (vph)	0	0	288	0	0	38	0	9	0	0	7	0
Lane Group Flow (vph)	358	181	115	204	121	4	318	1458	0	46	2118	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	17.8	16.6	16.6	12.6	11.4	11.4	25.1	50.2		25.1	50.2	
Effective Green, g (s)	17.8	16.6	16.6	12.6	11.4	11.4	25.1	50.2		25.1	50.2	
Actuated g/C Ratio	0.15	0.14	0.14	0.10	0.09	0.09	0.21	0.41		0.21	0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	502	483	216	356	332	148	365	2068		365	2074	
v/s Ratio Prot	c0.10	0.05		0.06	0.03		c0.18	0.29		0.03	c0.42	
v/s Ratio Perm			c0.07			0.00						
v/c Ratio	0.71	0.37	0.53	0.57	0.36	0.03	0.87	0.71		0.13	1.02	
Uniform Delay, d1	49.4	47.7	48.9	51.9	51.7	50.0	46.6	29.5		39.3	35.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.5	2.5	2.2	0.7	0.1	19.7	2.0		0.7	25.3	
Delay (s)	54.2	48.2	51.4	54.1	52.3	50.1	66.4	31.6		40.0	61.0	
Level of Service	D	D	D	D	D	D	E	C		D	E	
Approach Delay (s)		51.8			53.1			37.8			60.5	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	50.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	121.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	11	314	10	22	10	271	1220	4	17	1867	268
Future Volume (vph)	366	11	314	10	22	10	271	1220	4	17	1867	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1834	1583	3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1834	1583	3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	370	11	317	10	22	10	274	1232	4	17	1886	271
RTOR Reduction (vph)	0	0	270	0	0	10	0	0	0	0	0	83
Lane Group Flow (vph)	370	11	47	0	32	0	274	1236	0	17	1886	188
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	21.0	21.0	21.0		6.9	6.9	16.6	92.8		3.3	79.5	79.5
Effective Green, g (s)	21.0	21.0	21.0		6.9	6.9	16.6	92.8		3.3	79.5	79.5
Actuated g/C Ratio	0.15	0.15	0.15		0.05	0.05	0.12	0.65		0.02	0.56	0.56
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	507	275	234		89	76	401	3321		41	2846	886
v/s Ratio Prot	c0.11	0.01			c0.02		c0.08	0.24		0.01	c0.37	
v/s Ratio Perm			0.03			0.00						0.12
v/c Ratio	0.73	0.04	0.20		0.36	0.01	0.68	0.37		0.41	0.66	0.21
Uniform Delay, d1	57.8	51.9	53.1		65.4	64.3	60.2	11.3		68.4	21.9	15.6
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	0.1	0.4		2.5	0.0	4.8	0.3		6.7	1.2	0.5
Delay (s)	63.0	51.9	53.6		67.9	64.3	64.9	11.6		75.1	23.1	16.2
Level of Service	E	D	D		E	E	E	B		E	C	B
Approach Delay (s)		58.5			67.0			21.3			22.6	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1	48	44	2	32	62	1482	25	18	2210	37
Future Volume (vph)	33	1	48	44	2	32	62	1482	25	18	2210	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.92			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1681			1778	1583	1770	3530		1770	3530	
Flt Permitted		0.85			0.54	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1454			998	1583	1770	3530		1770	3530	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	34	1	50	46	2	33	65	1544	26	19	2302	39
RTOR Reduction (vph)	0	39	0	0	0	31	0	1	0	0	1	0
Lane Group Flow (vph)	0	46	0	0	48	2	65	1569	0	19	2340	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		9.1			9.1	9.1	6.3	108.1		2.3	104.1	
Effective Green, g (s)		9.1			9.1	9.1	6.3	108.1		2.3	104.1	
Actuated g/C Ratio		0.07			0.07	0.07	0.05	0.82		0.02	0.79	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		99			68	108	84	2879		30	2773	
v/s Ratio Prot							c0.04	c0.44		0.01	c0.66	
v/s Ratio Perm		0.03			c0.05	0.00						
v/c Ratio		0.46			0.71	0.02	0.77	0.55		0.63	0.84	
Uniform Delay, d1		59.4			60.4	57.5	62.4	4.0		64.7	9.0	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.4			28.3	0.1	34.8	0.7		36.3	3.3	
Delay (s)		62.8			88.7	57.6	97.2	4.8		101.0	12.4	
Level of Service		E			F	E	F	A		F	B	
Approach Delay (s)		62.8			76.0			8.5			13.1	
Approach LOS		E			E			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	132.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	309	142	320	20	214	274	412	981	8	107	1483	689
Future Volume (vph)	309	142	320	20	214	274	412	981	8	107	1483	689
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.92	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3120	1441	1770	3539	1583	3433	5079		1770	4843	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3120	1441	1770	3539	1583	3433	5079		1770	4843	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	319	146	330	21	221	282	425	1011	8	110	1529	710
RTOR Reduction (vph)	0	129	129	0	0	233	0	0	0	0	65	0
Lane Group Flow (vph)	319	182	36	21	221	49	425	1019	0	110	2174	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.0	24.4	24.4	1.9	15.3	15.3	15.1	55.5		11.6	52.0	
Effective Green, g (s)	11.0	24.4	24.4	1.9	15.3	15.3	15.1	55.5		11.6	52.0	
Actuated g/C Ratio	0.10	0.22	0.22	0.02	0.14	0.14	0.14	0.50		0.11	0.47	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	342	689	318	30	490	219	469	2553		185	2281	
v/s Ratio Prot	c0.09	0.06		0.01	c0.06		c0.12	0.20		0.06	c0.45	
v/s Ratio Perm			0.03			0.03						
v/c Ratio	0.93	0.26	0.11	0.70	0.45	0.23	0.91	0.40		0.59	0.95	
Uniform Delay, d1	49.3	35.6	34.4	54.0	43.7	42.3	47.0	17.1		47.2	28.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.7	0.2	0.2	52.7	0.7	0.5	20.8	0.5		5.1	10.7	
Delay (s)	81.0	35.8	34.5	106.7	44.4	42.8	67.8	17.5		52.2	38.7	
Level of Service	F	D	C	F	D	D	E	B		D	D	
Approach Delay (s)		53.7			46.0			32.3			39.3	
Approach LOS		D			D			C			D	

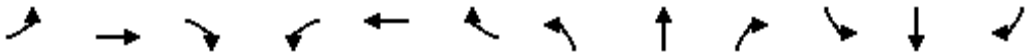
Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	84.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	12	259	41	16	16	336	845	17	14	1915	111
Future Volume (vph)	148	12	259	41	16	16	336	845	17	14	1915	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1758		3433	5070		1770	5043	
Flt Permitted		0.74	1.00		0.78		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1378	1583		1413		3433	5070		1770	5043	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	156	13	273	43	17	17	354	889	18	15	2016	117
RTOR Reduction (vph)	0	0	217	0	14	0	0	2	0	0	8	0
Lane Group Flow (vph)	0	169	56	0	64	0	354	905	0	15	2125	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		15.4	15.4		15.4		13.2	44.2		2.4	31.4	
Effective Green, g (s)		15.4	15.4		15.4		13.2	44.2		2.4	31.4	
Actuated g/C Ratio		0.21	0.21		0.21		0.18	0.59		0.03	0.42	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		283	325		290		605	2995		56	2116	
v/s Ratio Prot							c0.10	0.18		0.01	c0.42	
v/s Ratio Perm		c0.12	0.04		0.04							
v/c Ratio		0.60	0.17		0.22		0.59	0.30		0.27	1.00	
Uniform Delay, d1		26.9	24.5		24.7		28.3	7.6		35.3	21.7	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		3.4	0.3		0.4		1.4	0.3		2.6	20.6	
Delay (s)		30.3	24.7		25.1		29.7	7.9		37.9	42.3	
Level of Service		C	C		C		C	A		D	D	
Approach Delay (s)		26.8			25.1			14.0			42.3	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	12	2	10	58	0	68	4	416	39	46	408	10
Future Volume (vph)	12	2	10	58	0	68	4	416	39	46	408	10
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
Hourly flow rate (vph)	13	2	11	64	0	75	4	457	43	51	448	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	26	139	504	510
Volume Left (vph)	13	64	4	51
Volume Right (vph)	11	75	43	11
Hadj (s)	-0.12	-0.20	-0.02	0.04
Departure Headway (s)	6.7	6.2	5.1	5.2
Degree Utilization, x	0.05	0.24	0.72	0.73
Capacity (veh/h)	458	510	680	671
Control Delay (s)	10.0	11.2	20.1	21.1
Approach Delay (s)	10.0	11.2	20.1	21.1
Approach LOS	B	B	C	C

Intersection Summary				
Delay	19.3			
Level of Service	C			
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	880	120	256	950	60	125	132	157	184	251	51
Future Volume (vph)	46	880	120	256	950	60	125	132	157	184	251	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1815	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.39	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	719	1863	1583	1208	1815	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	47	907	124	264	979	62	129	136	162	190	259	53
RTOR Reduction (vph)	0	0	79	0	0	27	0	0	113	0	6	0
Lane Group Flow (vph)	47	907	45	264	979	35	129	136	49	190	306	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	5.3	36.6	36.6	19.1	50.4	50.4	30.4	30.4	30.4	30.4	30.4	
Effective Green, g (s)	5.3	36.6	36.6	19.1	50.4	50.4	30.4	30.4	30.4	30.4	30.4	
Actuated g/C Ratio	0.05	0.37	0.37	0.19	0.51	0.51	0.30	0.30	0.30	0.30	0.30	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	93	1297	580	338	940	799	219	567	482	367	552	
v/s Ratio Prot	0.03	0.26		c0.15	c0.53			0.07			0.17	
v/s Ratio Perm			0.03			0.02	c0.18		0.03	0.16		
v/c Ratio	0.51	0.70	0.08	0.78	1.04	0.04	0.59	0.24	0.10	0.52	0.55	
Uniform Delay, d1	46.0	26.9	20.6	38.4	24.7	12.5	29.4	26.0	24.9	28.6	29.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.3	1.7	0.1	11.1	40.7	0.1	4.0	0.2	0.1	5.1	4.0	
Delay (s)	50.2	28.6	20.7	49.5	65.4	12.6	33.4	26.3	25.0	33.8	33.0	
Level of Service	D	C	C	D	E	B	C	C	C	C	C	
Approach Delay (s)		28.6			59.7			27.9			33.3	
Approach LOS		C			E			C			C	

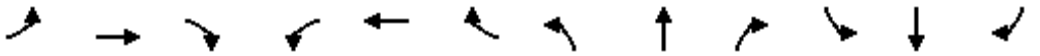
Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	99.8	Sum of lost time (s)	13.7
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	543	402	427	1289	48	224	136	118	104	482	130
Future Volume (vph)	95	543	402	427	1289	48	224	136	118	104	482	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5058		1610	3318	1583	1770	3426	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5058		1610	3318	1583	1770	3426	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	102	584	432	459	1386	52	241	146	127	112	518	140
RTOR Reduction (vph)	0	0	307	0	2	0	0	0	104	0	16	0
Lane Group Flow (vph)	102	584	125	459	1436	0	128	259	23	112	642	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	15.3	31.9	31.9	25.0	41.6		20.3	20.3	20.3	15.0	15.0	
Effective Green, g (s)	15.3	31.9	31.9	25.0	41.6		20.3	20.3	20.3	15.0	15.0	
Actuated g/C Ratio	0.14	0.29	0.29	0.23	0.38		0.18	0.18	0.18	0.14	0.14	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	245	1024	458	401	1909		296	611	291	240	466	
v/s Ratio Prot	0.06	0.17		c0.26	c0.28		c0.08	0.08		0.06	c0.19	
v/s Ratio Perm			0.08						0.01			
v/c Ratio	0.42	0.57	0.27	1.14	0.75		0.43	0.42	0.08	0.47	1.38	
Uniform Delay, d1	43.4	33.3	30.2	42.6	29.8		39.8	39.8	37.2	43.9	47.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.8	0.3	90.6	1.7		1.0	0.5	0.1	1.4	182.7	
Delay (s)	44.5	34.1	30.5	133.2	31.5		40.9	40.3	37.3	45.3	230.3	
Level of Service	D	C	C	F	C		D	D	D	D	F	
Approach Delay (s)		33.7			56.1			39.7			203.4	
Approach LOS		C			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	74.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	110.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	87.8%	ICU Level of Service	E
Analysis Period (min)	15		

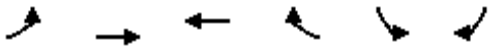
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	723	125	551	1105	32	234	123	38	43	460	110
Future Volume (vph)	27	723	125	551	1105	32	234	123	38	43	460	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3461		1770	3539	1583	1770	1797		1770	1809	
Flt Permitted	0.19	1.00		0.28	1.00	1.00	0.19	1.00		0.60	1.00	
Satd. Flow (perm)	351	3461		518	3539	1583	347	1797		1123	1809	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	28	761	132	580	1163	34	246	129	40	45	484	116
RTOR Reduction (vph)	0	18	0	0	0	13	0	14	0	0	11	0
Lane Group Flow (vph)	28	875	0	580	1163	21	246	155	0	45	589	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	217	2141		320	2189	979	93	482		301	486	
v/s Ratio Prot		0.25			0.33			0.09			0.33	
v/s Ratio Perm	0.08			c1.12		0.01	c0.71			0.04		
v/c Ratio	0.13	0.41		1.81	0.53	0.02	2.65	0.32		0.15	1.21	
Uniform Delay, d1	6.3	7.8		15.2	8.7	5.9	29.2	23.4		22.3	29.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	0.1		377.8	0.2	0.0	770.2	1.8		1.0	113.2	
Delay (s)	6.6	7.9		393.0	8.9	5.9	799.5	25.2		23.3	142.5	
Level of Service	A	A		F	A	A	F	C		C	F	
Approach Delay (s)		7.9			134.2			484.2			134.2	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	141.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.06		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

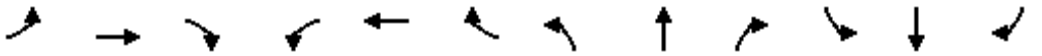
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	172	718	1242	529	296	383
Future Volume (vph)	172	718	1242	529	296	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	179	748	1294	551	308	399
RTOR Reduction (vph)	0	0	0	135	0	270
Lane Group Flow (vph)	179	748	1294	416	308	129
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	15.0	56.0	36.8	36.8	31.0	31.0
Effective Green, g (s)	15.0	56.0	36.8	36.8	31.0	31.0
Actuated g/C Ratio	0.16	0.58	0.38	0.38	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	276	2062	1355	606	570	510
v/s Ratio Prot	c0.10	0.21	c0.37		c0.17	
v/s Ratio Perm				0.26		0.08
v/c Ratio	0.65	0.36	0.95	0.69	0.54	0.25
Uniform Delay, d1	38.1	10.6	28.8	24.8	26.7	24.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2	0.5	14.9	3.2	3.6	1.2
Delay (s)	43.2	11.1	43.8	28.0	30.4	25.2
Level of Service	D	B	D	C	C	C
Approach Delay (s)		17.3	39.1		27.4	
Approach LOS		B	D		C	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	13.3
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	369	789	0	0	915	209	537	572	328	432	0	1059
Future Volume (vph)	369	789	0	0	915	209	537	572	328	432	0	1059
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1762	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1762	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	377	805	0	0	934	213	548	622	335	441	0	1081
RTOR Reduction (vph)	0	0	0	0	0	170	0	0	72	0	0	97
Lane Group Flow (vph)	377	805	0	0	934	43	493	677	263	441	0	984
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	40.9	40.9	40.9	23.1		39.7
Effective Green, g (s)	11.7	40.6			24.2	24.2	40.9	40.9	40.9	23.1		39.7
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.34	0.34	0.34	0.19		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	572	600	539	340		922
v/s Ratio Prot	0.11	0.23			c0.18		0.29	c0.38		c0.25		c0.35
v/s Ratio Perm						0.03			0.17			
v/c Ratio	1.13	0.67			0.91	0.13	0.86	1.13	0.49	1.30		1.07
Uniform Delay, d1	54.1	34.0			46.8	39.3	36.9	39.5	31.3	48.5		40.1
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	88.8	3.0			13.5	0.9	12.7	77.4	0.7	153.8		49.3
Delay (s)	142.9	37.0			60.3	40.2	49.6	117.0	32.0	202.2		89.4
Level of Service	F	D			E	D	D	F	C	F		F
Approach Delay (s)		70.8			56.6			76.0			122.1	
Approach LOS		E			E			E			F	

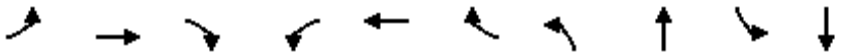
Intersection Summary			
HCM 2000 Control Delay	83.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	17	15	0	16	26	0
Future Volume (Veh/h)	17	15	0	16	26	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	16	0	17	28	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			34		43	26
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			34		43	26
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1578		968	1050

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	34	17	28
Volume Left	0	0	28
Volume Right	16	0	0
cSH	1700	1700	968
Volume to Capacity	0.02	0.01	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		

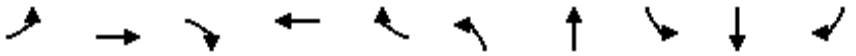


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	358	181	403	204	121	42	318	1467	46	2125
v/c Ratio	0.71	0.38	0.80	0.57	0.37	0.19	0.87	0.71	0.13	1.02
Control Delay	58.1	50.0	23.1	59.2	55.1	3.9	71.7	32.4	43.0	60.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.1	50.0	23.1	59.2	55.1	3.9	71.7	32.4	43.0	60.9
Queue Length 50th (ft)	136	68	50	78	47	0	237	329	29	~593
Queue Length 95th (ft)	199	106	167	125	81	7	#455	458	70	#858
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	708	730	591	708	730	388	365	2076	365	2080
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.25	0.68	0.29	0.17	0.11	0.87	0.71	0.13	1.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



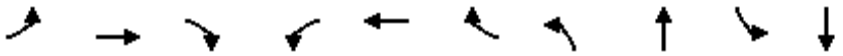
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	370	11	317	32	10	274	1236	17	1886	271
v/c Ratio	0.73	0.04	0.63	0.31	0.06	0.68	0.36	0.20	0.66	0.28
Control Delay	66.4	50.3	11.3	71.3	0.7	68.8	11.9	69.3	24.5	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	50.3	11.3	71.3	0.7	68.8	11.9	69.3	24.5	6.8
Queue Length 50th (ft)	169	9	0	29	0	127	158	15	447	35
Queue Length 95th (ft)	221	27	89	64	0	170	266	42	578	98
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	530	142	201	701	3438	361	2876	977
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.04	0.60	0.23	0.05	0.39	0.36	0.05	0.66	0.28

Intersection Summary

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	48	33	65	1570	19	2341
v/c Ratio	0.60	0.69	0.21	0.62	0.54	0.23	0.84
Control Delay	51.0	104.3	10.5	86.6	4.7	68.4	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	104.3	10.5	86.6	4.7	68.4	13.4
Queue Length 50th (ft)	36	41	0	56	134	16	634
Queue Length 95th (ft)	94	#105	21	#122	280	43	760
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	150	77	167	108	2934	81	2785
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.62	0.20	0.60	0.54	0.23	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	319	311	165	21	221	282	425	1019	110	2239
v/c Ratio	0.91	0.37	0.36	0.26	0.52	0.66	0.89	0.39	0.58	0.93
Control Delay	79.5	18.1	8.3	59.0	49.1	14.4	68.1	17.3	58.4	34.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.5	18.1	8.3	59.0	49.1	14.4	68.1	17.3	58.4	34.0
Queue Length 50th (ft)	114	43	0	14	76	8	151	151	73	496
Queue Length 95th (ft)	#211	92	61	43	115	87	#255	216	133	#684
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	349	1013	531	82	820	574	477	2610	246	2397
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.91	0.31	0.31	0.26	0.27	0.49	0.89	0.39	0.45	0.93

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	169	273	77	354	907	15	2133
v/c Ratio	0.60	0.50	0.25	0.58	0.28	0.05	1.01
Control Delay	36.1	7.0	22.2	32.1	7.7	27.3	45.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.1	7.0	22.2	32.1	7.7	27.3	45.4
Queue Length 50th (ft)	72	0	23	78	50	6	344
Queue Length 95th (ft)	129	57	57	112	131	22	#542
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	313	570	334	826	3195	378	2120
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.48	0.23	0.43	0.28	0.04	1.01

Intersection Summary

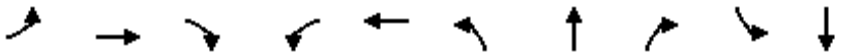
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	47	907	124	264	979	62	129	136	162	190	312
v/c Ratio	0.32	0.72	0.19	0.77	1.02	0.07	0.58	0.24	0.27	0.51	0.55
Control Delay	51.1	31.4	4.8	53.8	61.2	4.8	44.6	29.6	6.3	36.5	34.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	31.4	4.8	53.8	61.2	4.8	44.6	29.6	6.3	36.5	34.1
Queue Length 50th (ft)	28	256	0	154	~703	2	67	62	0	96	155
Queue Length 95th (ft)	70	350	37	271	#1010	24	#177	135	51	202	295
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	456	1641	801	456	956	839	222	576	601	373	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.55	0.15	0.58	1.02	0.07	0.58	0.24	0.27	0.51	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	102	584	432	459	1438	128	259	127	112	658
v/c Ratio	0.42	0.57	0.57	1.14	0.75	0.43	0.42	0.32	0.46	1.36
Control Delay	50.3	35.7	6.0	129.7	32.7	46.1	42.9	9.4	52.2	212.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.3	35.7	6.0	129.7	32.7	46.1	42.9	9.4	52.2	212.2
Queue Length 50th (ft)	69	184	0	~395	315	91	92	0	76	~330
Queue Length 95th (ft)	127	244	75	#620	387	161	138	52	138	#467
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	402	1801	1017	402	2577	482	995	563	241	483
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.32	0.42	1.14	0.56	0.27	0.26	0.23	0.46	1.36

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

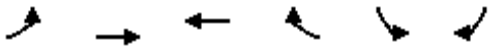
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	893	580	1163	34	246	169	45	600
v/c Ratio	0.13	0.41	1.81	0.53	0.03	2.67	0.34	0.15	1.21
Control Delay	8.1	8.0	397.2	9.8	2.3	801.4	23.1	24.0	139.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	8.0	397.2	9.8	2.3	801.4	23.1	24.0	139.7
Queue Length 50th (ft)	5	101	~287	155	0	~211	60	17	~368
Queue Length 95th (ft)	17	137	#483	204	10	#315	112	43	#566
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	216	2159	320	2189	992	92	496	301	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.41	1.81	0.53	0.03	2.67	0.34	0.15	1.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	179	748	1294	551	308	399
v/c Ratio	0.65	0.36	0.95	0.74	0.54	0.51
Control Delay	48.7	11.2	46.4	23.3	31.0	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	11.2	46.4	23.3	31.0	5.1
Queue Length 50th (ft)	104	118	397	174	153	0
Queue Length 95th (ft)	163	155	#614	#384	238	64
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	460	2143	1356	741	570	780
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.35	0.95	0.74	0.54	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	377	805	934	213	493	677	335	441	1081
v/c Ratio	1.13	0.67	0.91	0.44	0.86	1.13	0.55	1.30	1.07
Control Delay	137.4	37.4	60.6	8.3	53.4	114.6	25.0	193.2	81.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.4	37.4	60.6	8.3	53.4	114.6	25.0	193.2	81.6
Queue Length 50th (ft)	~174	279	261	0	372	~638	140	~436	~480
Queue Length 95th (ft)	#273	351	#339	64	#572	#881	236	#639	#627
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	489	572	600	611	340	1014
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.67	0.91	0.44	0.86	1.13	0.55	1.30	1.07

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	337	170	395	127	151	48	349	1736	180	86	1343	225
Future Volume (vph)	337	170	395	127	151	48	349	1736	180	86	1343	225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	5014		1770	4976	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	5014		1770	4976	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	379	191	444	143	170	54	392	1951	202	97	1509	253
RTOR Reduction (vph)	0	0	311	0	0	49	0	8	0	0	15	0
Lane Group Flow (vph)	379	191	133	143	170	5	392	2145	0	97	1747	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	18.6	19.3	19.3	10.6	11.3	11.3	25.1	50.1		25.1	50.1	
Effective Green, g (s)	18.6	19.3	19.3	10.6	11.3	11.3	25.1	50.1		25.1	50.1	
Actuated g/C Ratio	0.15	0.16	0.16	0.09	0.09	0.09	0.21	0.41		0.21	0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	522	559	250	298	327	146	363	2057		363	2041	
v/s Ratio Prot	c0.11	0.05		0.04	0.05		c0.22	c0.43		0.05	0.35	
v/s Ratio Perm			c0.08			0.00						
v/c Ratio	0.73	0.34	0.53	0.48	0.52	0.03	1.08	1.04		0.27	0.86	
Uniform Delay, d1	49.3	45.7	47.3	53.1	52.8	50.4	48.5	36.0		40.8	32.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.0	0.4	2.2	1.2	1.4	0.1	70.3	32.1		1.8	4.9	
Delay (s)	54.3	46.1	49.4	54.3	54.2	50.5	118.8	68.1		42.6	37.6	
Level of Service	D	D	D	D	D	D	F	E		D	D	
Approach Delay (s)		50.6			53.7			75.9			37.9	
Approach LOS		D			D			E			D	

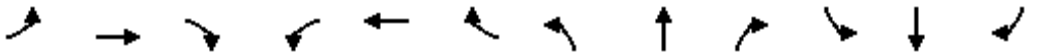
Intersection Summary			
HCM 2000 Control Delay	57.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	122.1	Sum of lost time (s)	17.0
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	355	19	284	11	26	21	399	1753	1	52	1309	356
Future Volume (vph)	355	19	284	11	26	21	399	1753	1	52	1309	356
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1835	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1835	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	359	19	287	11	26	21	403	1771	1	53	1322	360
RTOR Reduction (vph)	0	0	245	0	0	20	0	0	0	0	0	171
Lane Group Flow (vph)	359	19	42	0	37	1	403	1772	0	53	1322	189
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	20.7	20.7	20.7		7.2	7.2	21.9	87.7		8.4	74.2	74.2
Effective Green, g (s)	20.7	20.7	20.7		7.2	7.2	21.9	87.7		8.4	74.2	74.2
Actuated g/C Ratio	0.15	0.15	0.15		0.05	0.05	0.15	0.62		0.06	0.52	0.52
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	500	271	230		93	80	529	3140		104	2657	827
v/s Ratio Prot	c0.10	0.01			c0.02		c0.12	c0.35		0.03	0.26	
v/s Ratio Perm			0.03			0.00						0.12
v/c Ratio	0.72	0.07	0.18		0.40	0.01	0.76	0.56		0.51	0.50	0.23
Uniform Delay, d1	57.9	52.3	53.2		65.3	64.0	57.6	15.9		64.8	21.9	18.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.9	0.1	0.4		2.8	0.1	6.4	0.7		3.9	0.7	0.6
Delay (s)	62.8	52.5	53.6		68.1	64.1	64.0	16.7		68.7	22.5	19.0
Level of Service	E	D	D		E	E	E	B		E	C	B
Approach Delay (s)		58.5			66.6			25.4			23.2	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	59	33	2	26	66	2193	43	33	1557	56
Future Volume (vph)	24	2	59	33	2	26	66	2193	43	33	1557	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.91			1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1665			1779	1583	1770	3529		1770	3521	
Flt Permitted		0.89			0.47	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1505			877	1583	1770	3529		1770	3521	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	25	2	61	34	2	27	69	2284	45	34	1622	58
RTOR Reduction (vph)	0	57	0	0	0	25	0	1	0	0	2	0
Lane Group Flow (vph)	0	31	0	0	36	2	69	2328	0	34	1678	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		8.8			8.8	8.8	8.0	104.2		4.6	100.8	
Effective Green, g (s)		8.8			8.8	8.8	8.0	104.2		4.6	100.8	
Actuated g/C Ratio		0.07			0.07	0.07	0.06	0.80		0.04	0.77	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		101			59	106	108	2815		62	2717	
v/s Ratio Prot							c0.04	c0.66		0.02	0.48	
v/s Ratio Perm		0.02			c0.04	0.00						
v/c Ratio		0.31			0.61	0.02	0.64	0.83		0.55	0.62	
Uniform Delay, d1		58.0			59.2	56.9	59.9	7.8		62.0	6.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.7			17.2	0.1	11.8	2.9		9.6	1.1	
Delay (s)		59.7			76.5	56.9	71.7	10.8		71.5	7.6	
Level of Service		E			E	E	E	B		E	A	
Approach Delay (s)		59.7			68.1			12.5			8.8	
Approach LOS		E			E			B			A	

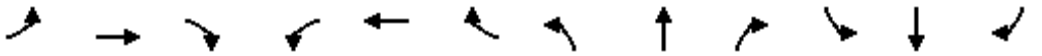
Intersection Summary			
HCM 2000 Control Delay	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	130.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	576	185	550	12	129	140	396	1570	19	148	1155	336
Future Volume (vph)	576	185	550	12	129	140	396	1570	19	148	1155	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3086	1441	1770	3539	1583	3433	5076		1770	4914	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3086	1441	1770	3539	1583	3433	5076		1770	4914	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	594	191	567	12	133	144	408	1619	20	153	1191	346
RTOR Reduction (vph)	0	202	202	0	0	122	0	1	0	0	54	0
Lane Group Flow (vph)	594	273	81	12	133	22	408	1638	0	153	1483	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	11.0	22.1	22.1	0.8	11.9	11.9	8.0	29.0		8.0	29.0	
Effective Green, g (s)	11.0	22.1	22.1	0.8	11.9	11.9	8.0	29.0		8.0	29.0	
Actuated g/C Ratio	0.14	0.29	0.29	0.01	0.15	0.15	0.10	0.38		0.10	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	491	886	414	18	547	244	357	1914		184	1853	
v/s Ratio Prot	c0.17	c0.09		0.01	0.04		c0.12	c0.32		0.09	c0.30	
v/s Ratio Perm			0.06			0.01						
v/c Ratio	1.21	0.31	0.20	0.67	0.24	0.09	1.14	0.86		0.83	0.80	
Uniform Delay, d1	33.0	21.4	20.7	37.9	28.5	27.9	34.5	22.0		33.8	21.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	112.2	0.2	0.2	66.1	0.2	0.2	92.4	5.2		26.1	3.7	
Delay (s)	145.1	21.6	20.9	104.0	28.8	28.0	126.8	27.2		59.9	25.1	
Level of Service	F	C	C	F	C	C	F	C		E	C	
Approach Delay (s)		75.7			31.5			47.0			28.3	
Approach LOS		E			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	47.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	76.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

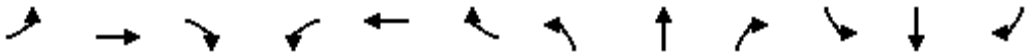
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	18	321	29	9	13	301	1912	29	21	1074	134
Future Volume (vph)	225	18	321	29	9	13	301	1912	29	21	1074	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.96		1.00	1.00		1.00	0.98	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1780	1583		1747		3433	5074		1770	5001	
Flt Permitted		0.70	1.00		0.72		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1309	1583		1296		3433	5074		1770	5001	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	19	338	31	9	14	317	2013	31	22	1131	141
RTOR Reduction (vph)	0	0	264	0	11	0	0	1	0	0	18	0
Lane Group Flow (vph)	0	256	74	0	43	0	317	2043	0	22	1254	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		12.6	43.2		2.4	31.0	
Effective Green, g (s)		16.4	16.4		16.4		12.6	43.2		2.4	31.0	
Actuated g/C Ratio		0.22	0.22		0.22		0.17	0.58		0.03	0.41	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		287	347		284		578	2930		56	2072	
v/s Ratio Prot							c0.09	c0.40		0.01	0.25	
v/s Ratio Perm		c0.20	0.05		0.03							
v/c Ratio		0.89	0.21		0.15		0.55	0.70		0.39	0.61	
Uniform Delay, d1		28.3	23.9		23.6		28.5	11.2		35.5	17.1	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.3	0.3		0.2		1.1	1.4		4.5	1.3	
Delay (s)		55.7	24.2		23.8		29.6	12.6		40.0	18.4	
Level of Service		E	C		C		C	B		D	B	
Approach Delay (s)		37.8			23.8			14.9			18.8	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	78.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	8	10	55	4	51	20	358	43	62	445	10
Future Volume (vph)	10	8	10	55	4	51	20	358	43	62	445	10
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
Hourly flow rate (vph)	11	9	11	60	4	56	22	393	47	68	489	11

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	31	120	462	568
Volume Left (vph)	11	60	22	68
Volume Right (vph)	11	56	47	11
Hadj (s)	-0.11	-0.15	-0.02	0.05
Departure Headway (s)	6.7	6.3	5.2	5.1
Degree Utilization, x	0.06	0.21	0.66	0.80
Capacity (veh/h)	467	510	673	698
Control Delay (s)	10.1	11.0	17.6	25.3
Approach Delay (s)	10.1	11.0	17.6	25.3
Approach LOS	B	B	C	D

Intersection Summary				
Delay	20.5			
Level of Service	C			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	927	111	264	834	47	166	382	299	94	168	53
Future Volume (vph)	118	927	111	264	834	47	166	382	299	94	168	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1795	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.49	1.00	1.00	0.25	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	918	1863	1583	461	1795	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	122	956	114	272	860	48	171	394	308	97	173	55
RTOR Reduction (vph)	0	0	70	0	0	26	0	0	219	0	10	0
Lane Group Flow (vph)	122	956	44	272	860	22	171	394	89	97	218	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	12.5	40.2	40.2	20.1	47.8	47.8	30.1	30.1	30.1	30.1	30.1	
Effective Green, g (s)	12.5	40.2	40.2	20.1	47.8	47.8	30.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.12	0.39	0.39	0.19	0.46	0.46	0.29	0.29	0.29	0.29	0.29	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	212	1366	611	341	855	726	265	538	457	133	519	
v/s Ratio Prot	0.07	0.27		c0.15	c0.46			c0.21			0.12	
v/s Ratio Perm			0.03			0.01	0.19		0.06	0.21		
v/c Ratio	0.58	0.70	0.07	0.80	1.01	0.03	0.65	0.73	0.19	0.73	0.42	
Uniform Delay, d1	43.3	26.9	20.2	40.1	28.1	15.4	32.3	33.4	27.9	33.3	29.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.7	1.6	0.1	12.2	32.2	0.1	5.3	5.1	0.2	29.4	2.5	
Delay (s)	47.0	28.5	20.2	52.3	60.4	15.5	37.6	38.5	28.1	62.7	32.4	
Level of Service	D	C	C	D	E	B	D	D	C	E	C	
Approach Delay (s)		29.6			56.7			34.6			41.5	
Approach LOS		C			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	104.1	Sum of lost time (s)	13.7
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	1265	211	142	816	120	498	684	359	95	173	114
Future Volume (vph)	317	1265	211	142	816	120	498	684	359	95	173	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4987		1610	3366	1583	1770	3328	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4987		1610	3366	1583	1770	3328	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	341	1360	227	153	877	129	535	735	386	102	186	123
RTOR Reduction (vph)	0	0	82	0	14	0	0	0	217	0	76	0
Lane Group Flow (vph)	341	1360	145	153	992	0	412	858	169	102	233	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.1	56.2	56.2	17.1	48.2		33.1	33.1	33.1	13.5	13.5	
Effective Green, g (s)	25.1	56.2	56.2	17.1	48.2		33.1	33.1	33.1	13.5	13.5	
Actuated g/C Ratio	0.18	0.41	0.41	0.12	0.35		0.24	0.24	0.24	0.10	0.10	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	322	1442	645	219	1743		386	807	379	173	325	
v/s Ratio Prot	c0.19	c0.38		0.09	0.20		c0.26	0.25		0.06	c0.07	
v/s Ratio Perm			0.09						0.11			
v/c Ratio	1.06	0.94	0.23	0.70	0.57		1.07	1.06	0.45	0.59	0.72	
Uniform Delay, d1	56.4	39.3	26.6	57.9	36.4		52.4	52.4	44.6	59.5	60.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	66.6	12.6	0.2	9.3	0.4		64.8	49.8	0.8	5.1	7.4	
Delay (s)	123.0	51.9	26.8	67.3	36.9		117.2	102.2	45.5	64.6	67.7	
Level of Service	F	D	C	E	D		F	F	D	E	E	
Approach Delay (s)		61.5			40.9			92.7			66.9	
Approach LOS		E			D			F			E	

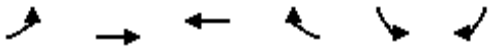
Intersection Summary			
HCM 2000 Control Delay	67.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	137.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	973	115	442	985	56	413	532	18	27	202	71
Future Volume (vph)	63	973	115	442	985	56	413	532	18	27	202	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3483		1770	3539	1583	1770	1854		1770	1790	
Flt Permitted	0.23	1.00		0.19	1.00	1.00	0.40	1.00		0.19	1.00	
Satd. Flow (perm)	423	3483		361	3539	1583	751	1854		347	1790	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	66	1024	121	465	1037	59	435	560	19	28	213	75
RTOR Reduction (vph)	0	11	0	0	0	22	0	1	0	0	16	0
Lane Group Flow (vph)	66	1134	0	465	1037	37	435	578	0	28	272	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	261	2155		223	2189	979	201	498		93	481	
v/s Ratio Prot		0.33			0.29			0.31			0.15	
v/s Ratio Perm	0.16			c1.29		0.02	c0.58			0.08		
v/c Ratio	0.25	0.53		2.09	0.47	0.04	2.16	1.16		0.30	0.57	
Uniform Delay, d1	6.9	8.6		15.2	8.2	6.0	29.2	29.2		23.3	25.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.2		503.4	0.2	0.0	540.0	92.3		8.1	4.8	
Delay (s)	7.4	8.9		518.6	8.4	6.0	569.3	121.6		31.4	30.0	
Level of Service	A	A		F	A	A	F	F		C	C	
Approach Delay (s)		8.8			160.3			313.6			30.1	
Approach LOS		A			F			F			C	

Intersection Summary			
HCM 2000 Control Delay	143.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.10		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	107.9%	ICU Level of Service	G
Analysis Period (min)	15		

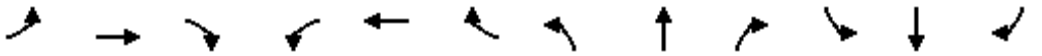
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	377	1214	1065	239	440	293
Future Volume (vph)	377	1214	1065	239	440	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	393	1265	1109	249	458	305
RTOR Reduction (vph)	0	0	0	80	0	208
Lane Group Flow (vph)	393	1265	1109	169	458	97
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	24.0	57.8	29.6	29.6	31.0	31.0
Effective Green, g (s)	24.0	57.8	29.6	29.6	31.0	31.0
Actuated g/C Ratio	0.25	0.59	0.30	0.30	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	2089	1070	478	560	501
v/s Ratio Prot	c0.22	0.36	c0.31		c0.26	
v/s Ratio Perm				0.11		0.06
v/c Ratio	0.91	0.61	1.04	0.35	0.82	0.19
Uniform Delay, d1	35.9	12.8	34.2	26.7	30.8	24.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	22.3	1.3	37.4	0.5	12.5	0.9
Delay (s)	58.2	14.1	71.5	27.1	43.4	25.2
Level of Service	E	B	E	C	D	C
Approach Delay (s)		24.5	63.4		36.1	
Approach LOS		C	E		D	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	97.9	Sum of lost time (s)	13.3
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	853	813	0	0	978	455	188	821	115	357	0	783
Future Volume (vph)	853	813	0	0	978	455	188	821	115	357	0	783
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	870	830	0	0	998	464	192	892	117	364	0	799
RTOR Reduction (vph)	0	0	0	0	0	191	0	0	63	0	0	455
Lane Group Flow (vph)	870	830	0	0	998	273	173	911	54	364	0	344
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Effective Green, g (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.38	0.38	0.38	0.13		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	632	665	595	224		915
v/s Ratio Prot	c0.25	0.23			c0.20		0.10	c0.52		c0.21		0.12
v/s Ratio Perm						0.17			0.03			
v/c Ratio	1.55	0.62			1.10	0.97	0.27	1.37	0.09	1.62		0.38
Uniform Delay, d1	54.4	32.8			53.4	53.0	28.2	40.5	26.2	56.8		33.4
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	255.4	2.2			61.2	45.7	0.2	175.9	0.1	300.8		0.3
Delay (s)	309.7	35.0			114.6	98.7	28.4	216.5	26.3	357.5		33.7
Level of Service	F	C			F	F	C	F	C	F		C
Approach Delay (s)		175.6			109.6			170.9			135.1	
Approach LOS		F			F			F			F	

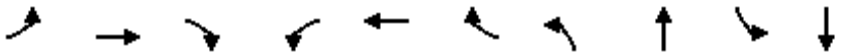
Intersection Summary			
HCM 2000 Control Delay	148.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	122.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	47	26	0	37	20	0
Future Volume (Veh/h)	47	26	0	37	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	51	28	0	40	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			79		105	65
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			79		105	65
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1519		893	999

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	79	40	22
Volume Left	0	0	22
Volume Right	28	0	0
cSH	1700	1700	893
Volume to Capacity	0.05	0.02	0.02
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.1
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.1
Approach LOS			A

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	14.1%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	379	191	444	143	170	54	392	2153	97	1762
v/c Ratio	0.72	0.34	0.79	0.48	0.52	0.25	1.08	1.04	0.27	0.86
Control Delay	57.9	47.4	20.8	59.4	59.3	7.9	116.8	67.4	44.7	38.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.9	47.4	20.8	59.4	59.3	7.9	116.8	67.4	44.7	38.1
Queue Length 50th (ft)	148	71	53	56	68	0	~344	~669	65	449
Queue Length 95th (ft)	204	108	177	93	108	21	#586	#848	124	572
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	704	727	618	704	726	386	363	2065	363	2055
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.26	0.72	0.20	0.23	0.14	1.08	1.04	0.27	0.86

Intersection Summary

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Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
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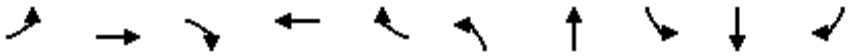


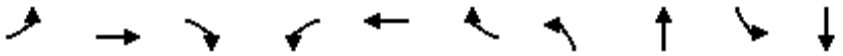
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	359	19	287	37	21	403	1772	53	1322	360
v/c Ratio	0.72	0.07	0.60	0.34	0.12	0.76	0.55	0.44	0.49	0.36
Control Delay	66.0	51.1	11.2	72.2	1.4	67.2	18.1	74.3	23.9	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	51.1	11.2	72.2	1.4	67.2	18.1	74.3	23.9	3.3
Queue Length 50th (ft)	163	15	0	34	0	186	357	48	290	0
Queue Length 95th (ft)	214	40	84	71	0	234	469	92	386	59
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	506	142	201	701	3197	361	2687	1005
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.06	0.57	0.26	0.10	0.57	0.55	0.15	0.49	0.36

Intersection Summary

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	88	36	27	69	2329	34	1680
v/c Ratio	0.55	0.61	0.18	0.53	0.82	0.34	0.61
Control Delay	36.7	99.7	7.7	73.9	11.6	69.5	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.7	99.7	7.7	73.9	11.6	69.5	8.2
Queue Length 50th (ft)	22	30	0	58	622	29	322
Queue Length 95th (ft)	78	#81	12	109	749	66	387
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	173	67	168	151	2852	110	2732
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.54	0.16	0.46	0.82	0.31	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	594	475	283	12	133	144	408	1639	153	1537
v/c Ratio	1.16	0.42	0.45	0.12	0.32	0.37	1.09	0.82	0.80	0.77
Control Delay	122.8	9.7	5.7	37.2	31.8	3.5	109.0	24.6	63.8	21.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	122.8	9.7	5.7	37.2	31.8	3.5	109.0	24.6	63.8	21.8
Queue Length 50th (ft)	~165	34	0	5	30	0	~108	234	69	202
Queue Length 95th (ft)	#282	82	61	22	54	8	#207	324	#176	285
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	513	1502	786	96	1202	689	373	2001	192	1988
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.32	0.36	0.13	0.11	0.21	1.09	0.82	0.80	0.77

Intersection Summary

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Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	256	338	54	317	2044	22	1272
v/c Ratio	0.89	0.55	0.18	0.55	0.65	0.08	0.61
Control Delay	62.6	7.0	20.4	32.0	12.3	27.6	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.6	7.0	20.4	32.0	12.3	27.6	18.7
Queue Length 50th (ft)	115	0	15	71	174	9	160
Queue Length 95th (ft)	#242	62	43	103	#427	28	221
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	297	620	305	826	3133	378	2088
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.55	0.18	0.38	0.65	0.06	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	122	956	114	272	860	48	171	394	308	97	228
v/c Ratio	0.58	0.70	0.17	0.80	1.01	0.06	0.65	0.73	0.46	0.73	0.43
Control Delay	54.8	30.7	4.8	58.0	61.9	4.1	47.2	44.1	6.1	68.3	32.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	30.7	4.8	58.0	61.9	4.1	47.2	44.1	6.1	68.3	32.6
Queue Length 50th (ft)	75	278	0	166	~600	0	95	226	0	55	110
Queue Length 95th (ft)	142	374	36	281	#905	18	#216	#418	67	#165	209
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	426	1534	750	426	854	756	265	538	676	133	529
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.62	0.15	0.64	1.01	0.06	0.65	0.73	0.46	0.73	0.43

Intersection Summary

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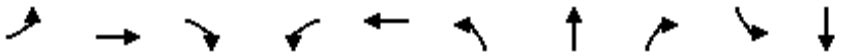

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	341	1360	227	153	1006	412	858	386	102	309
v/c Ratio	1.06	0.94	0.31	0.70	0.57	1.07	1.06	0.65	0.59	0.77
Control Delay	120.8	53.7	12.7	74.9	37.1	114.7	99.4	18.7	75.0	57.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	14.7	16.2	1.5	0.0	0.0
Total Delay	120.8	53.7	12.7	74.9	37.1	129.4	115.6	20.2	75.0	57.9
Queue Length 50th (ft)	~342	623	51	135	266	~456	~473	77	89	105
Queue Length 95th (ft)	#576	#848	122	212	312	#734	#658	205	159	166
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	321	1440	726	321	2043	386	807	596	192	437
Starvation Cap Reductn	0	0	0	0	0	86	201	84	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.06	0.94	0.31	0.48	0.49	1.37	1.42	0.75	0.53	0.71

Intersection Summary

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Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	66	1145	465	1037	59	435	579	28	288
v/c Ratio	0.25	0.53	2.09	0.47	0.06	2.16	1.16	0.30	0.58
Control Delay	10.0	9.5	521.9	9.1	2.0	561.2	122.2	33.8	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	9.5	521.9	9.1	2.0	561.2	122.2	33.8	28.8
Queue Length 50th (ft)	13	147	~266	131	0	~353	~349	11	115
Queue Length 95th (ft)	36	196	#448	174	13	#526	#546	36	193
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	261	2166	223	2189	1001	201	499	92	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.53	2.09	0.47	0.06	2.16	1.16	0.30	0.58

Intersection Summary

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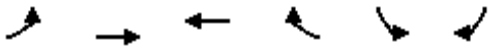

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	393	1265	1109	249	458	305
v/c Ratio	0.91	0.61	1.04	0.45	0.82	0.43
Control Delay	62.0	14.3	72.4	17.6	44.5	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	14.3	72.4	17.6	44.5	5.0
Queue Length 50th (ft)	236	245	~404	64	263	0
Queue Length 95th (ft)	#401	308	#534	137	#426	58
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	452	2105	1069	558	560	710
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.60	1.04	0.45	0.82	0.43

Intersection Summary

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Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	870	830	998	464	173	911	117	364	799
v/c Ratio	1.55	0.62	1.10	0.98	0.27	1.37	0.18	1.62	0.58
Control Delay	291.7	35.3	110.2	63.5	29.7	209.4	7.4	336.5	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	291.7	35.3	110.2	63.5	29.7	209.4	7.4	336.5	7.5
Queue Length 50th (ft)	~531	296	~349	215	106	~1066	8	~441	40
Queue Length 95th (ft)	#660	365	#442	#440	167	#1331	49	#637	103
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	473	632	665	658	224	1366
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.55	0.62	1.10	0.98	0.27	1.37	0.18	1.63	0.58

Intersection Summary

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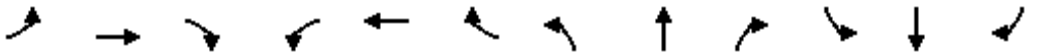
APPENDIX F

CUMULATIVE AND CUMULATIVE PLUS PROJECT LEVEL OF SERVICE CALCULATION WORKSHEETS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	390	279	416	256	140	55	347	1636	256	79	2381	202
Future Volume (vph)	390	279	416	256	140	55	347	1636	256	79	2381	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5026	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5026	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	438	313	467	288	157	62	390	1838	288	89	2675	227
RTOR Reduction (vph)	0	0	254	0	0	54	0	14	0	0	7	0
Lane Group Flow (vph)	438	313	213	288	157	8	390	2112	0	89	2895	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	21.1	21.4	21.4	16.2	16.5	16.5	25.1	50.2		25.1	50.2	
Effective Green, g (s)	21.1	21.4	21.4	16.2	16.5	16.5	25.1	50.2		25.1	50.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.13	0.13	0.19	0.39		0.19	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	557	583	260	428	449	201	342	1925		342	1942	
v/s Ratio Prot	c0.13	0.09		0.08	0.04		c0.22	0.42		0.05	c0.58	
v/s Ratio Perm			c0.13			0.00						
v/c Ratio	0.79	0.54	0.82	0.67	0.35	0.04	1.14	1.10		0.26	1.49	
Uniform Delay, d1	52.2	49.7	52.4	54.3	51.8	49.7	52.4	39.9		44.5	39.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.2	1.0	17.9	4.1	0.5	0.1	92.4	52.5		1.8	223.7	
Delay (s)	59.4	50.7	70.3	58.5	52.3	49.8	144.8	92.3		46.4	263.5	
Level of Service	E	D	E	E	D	D	F	F		D	F	
Approach Delay (s)		61.4			55.5			100.5			257.1	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	155.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	129.9	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		

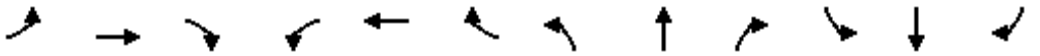
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	475	3	384	24	15	0	352	1750	5	15	2551	358
Future Volume (vph)	475	3	384	24	15	0	352	1750	5	15	2551	358
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00		0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1807		3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1807		3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	480	3	388	24	15	0	356	1768	5	15	2577	362
RTOR Reduction (vph)	0	0	324	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	480	3	64	0	39	0	356	1773	0	15	2577	273
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	23.3	23.3	23.3		7.3		20.0	90.2		3.2	73.4	73.4
Effective Green, g (s)	23.3	23.3	23.3		7.3		20.0	90.2		3.2	73.4	73.4
Actuated g/C Ratio	0.16	0.16	0.16		0.05		0.14	0.64		0.02	0.52	0.52
Clearance Time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	563	305	259		92		483	3228		39	2628	818
v/s Ratio Prot	c0.14	0.00			c0.02		c0.10	0.35		0.01	c0.51	
v/s Ratio Perm			0.04									0.17
v/c Ratio	0.85	0.01	0.25		0.42		0.74	0.55		0.38	0.98	0.33
Uniform Delay, d1	57.7	49.7	51.7		65.3		58.5	14.5		68.4	33.6	20.0
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.9	0.0	0.5		3.1		5.8	0.7		6.2	13.6	1.1
Delay (s)	69.6	49.7	52.2		68.4		64.3	15.2		74.6	47.2	21.1
Level of Service	E	D	D		E		E	B		E	D	C
Approach Delay (s)		61.8			68.4			23.4			44.1	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	0	90	0	0	0	67	2096	0	0	2988	40
Future Volume (vph)	63	0	90	0	0	0	67	2096	0	0	2988	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.92					1.00	1.00			1.00	
Flt Protected		0.98					0.95	1.00			1.00	
Satd. Flow (prot)		1680					1770	3539			3532	
Flt Permitted		0.98					0.95	1.00			1.00	
Satd. Flow (perm)		1680					1770	3539			3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	66	0	94	0	0	0	70	2183	0	0	3112	42
RTOR Reduction (vph)	0	47	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	113	0	0	0	0	70	2183	0	0	3154	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		8.0					6.0	113.0			103.0	
Effective Green, g (s)		8.0					6.0	113.0			103.0	
Actuated g/C Ratio		0.06					0.05	0.87			0.79	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		103					81	3076			2798	
v/s Ratio Prot							0.04	c0.62			c0.89	
v/s Ratio Perm		0.07										
v/c Ratio		1.10					0.86	0.71			1.13	
Uniform Delay, d1		61.0					61.6	2.9			13.5	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		117.5					56.9	1.4			62.5	
Delay (s)		178.5					118.4	4.3			76.0	
Level of Service		F					F	A			E	
Approach Delay (s)		178.5			0.0			7.9			76.0	
Approach LOS		F			A			A			E	

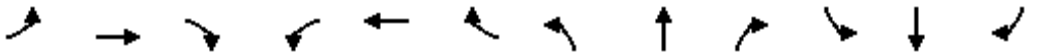
Intersection Summary			
HCM 2000 Control Delay	51.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	408	174	512	25	241	284	663	1459	11	114	2075	867
Future Volume (vph)	408	174	512	25	241	284	663	1459	11	114	2075	867
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3087	1441	1770	3539	1583	3433	5080		1770	4860	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3087	1441	1770	3539	1583	3433	5080		1770	4860	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	421	179	528	26	248	293	684	1504	11	118	2139	894
RTOR Reduction (vph)	0	188	215	0	0	85	0	0	0	0	48	0
Lane Group Flow (vph)	421	255	49	26	248	208	684	1515	0	118	2985	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	13.0	26.2	26.2	3.6	16.8	30.9	22.0	80.9		14.1	73.0	
Effective Green, g (s)	13.0	26.2	26.2	3.6	16.8	30.9	22.0	80.9		14.1	73.0	
Actuated g/C Ratio	0.09	0.18	0.18	0.03	0.12	0.22	0.16	0.57		0.10	0.51	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	314	570	266	44	419	389	532	2898		176	2501	
v/s Ratio Prot	c0.12	0.08		0.01	c0.07	0.05	c0.20	0.30		0.07	c0.61	
v/s Ratio Perm			0.03			0.08						
v/c Ratio	1.34	0.45	0.18	0.59	0.59	0.53	1.29	0.52		0.67	1.19	
Uniform Delay, d1	64.4	51.4	48.8	68.4	59.3	49.1	59.9	18.6		61.6	34.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	173.3	0.6	0.3	19.5	2.2	1.4	142.3	0.7		9.6	91.4	
Delay (s)	237.7	51.9	49.1	87.8	61.5	50.5	202.2	19.3		71.2	125.8	
Level of Service	F	D	D	F	E	D	F	B		E	F	
Approach Delay (s)		120.6			57.0			76.2			123.8	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	103.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	141.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	110.9%	ICU Level of Service	H
Analysis Period (min)	15		

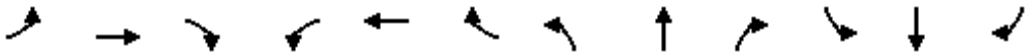
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	20	337	69	19	25	454	1397	38	26	2726	113
Future Volume (vph)	170	20	337	69	19	25	454	1397	38	26	2726	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783	1583		1754		3433	5065		1770	5055	
Flt Permitted		0.69	1.00		0.63		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1287	1583		1133		3433	5065		1770	5055	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	21	355	73	20	26	478	1471	40	27	2869	119
RTOR Reduction (vph)	0	0	279	0	13	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	200	76	0	106	0	478	1508	0	27	2982	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Effective Green, g (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Actuated g/C Ratio		0.21	0.21		0.21		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		275	338		242		697	2789		113	1946	
v/s Ratio Prot							c0.14	0.30		0.02	c0.59	
v/s Ratio Perm		c0.16	0.05		0.09							
v/c Ratio		0.73	0.22		0.44		0.69	0.54		0.24	1.53	
Uniform Delay, d1		27.4	24.3		25.5		27.6	10.7		33.3	23.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.2	0.3		1.3		2.8	0.8		1.1	242.3	
Delay (s)		36.6	24.6		26.8		30.4	11.5		34.4	265.3	
Level of Service		D	C		C		C	B		C	F	
Approach Delay (s)		28.9			26.8			16.0			263.2	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	148.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

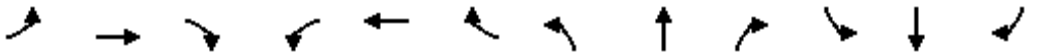
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	3	11	71	0	70	5	595	74	81	668	11
Future Volume (vph)	13	3	11	71	0	70	5	595	74	81	668	11
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
Hourly flow rate (vph)	14	3	12	78	0	77	5	654	81	89	734	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	155	740	835
Volume Left (vph)	14	78	5	89
Volume Right (vph)	12	77	81	12
Hadj (s)	-0.12	-0.16	-0.03	0.05
Departure Headway (s)	7.6	7.0	5.5	5.6
Degree Utilization, x	0.06	0.30	1.13	1.29
Capacity (veh/h)	450	502	660	658
Control Delay (s)	11.1	12.9	97.8	161.2
Approach Delay (s)	11.1	12.9	97.8	161.2
Approach LOS	B	B	F	F

Intersection Summary				
Delay	119.0			
Level of Service	F			
Intersection Capacity Utilization	96.9%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	1017	143	359	1256	75	199	209	253	212	296	58
Future Volume (vph)	52	1017	143	359	1256	75	199	209	253	212	296	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1817	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.27	1.00	1.00	0.50	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	499	1863	1583	932	1817	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	54	1048	147	370	1295	77	205	215	261	219	305	60
RTOR Reduction (vph)	0	0	92	0	0	26	0	0	189	0	6	0
Lane Group Flow (vph)	54	1048	55	370	1295	51	205	215	72	219	359	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	7.4	40.4	40.4	24.4	57.4	57.4	30.1	30.1	30.1	30.1	30.1	
Effective Green, g (s)	7.4	40.4	40.4	24.4	57.4	57.4	30.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.07	0.37	0.37	0.22	0.53	0.53	0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	120	1316	588	397	984	836	138	516	438	258	503	
v/s Ratio Prot	0.03	0.30		c0.21	c0.70			0.12			0.20	
v/s Ratio Perm			0.03			0.03	c0.41		0.05	0.23		
v/c Ratio	0.45	0.80	0.09	0.93	1.32	0.06	1.49	0.42	0.17	0.85	0.71	
Uniform Delay, d1	48.6	30.4	22.2	41.3	25.6	12.5	39.2	32.1	29.7	37.1	35.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.7	3.4	0.1	28.5	149.5	0.1	252.9	0.5	0.2	27.8	8.4	
Delay (s)	51.3	33.9	22.3	69.8	175.1	12.6	292.2	32.6	29.9	64.9	43.8	
Level of Service	D	C	C	E	F	B	F	C	C	E	D	
Approach Delay (s)		33.3			145.5			109.7			51.7	
Approach LOS		C			F			F			D	

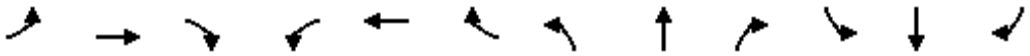
Intersection Summary			
HCM 2000 Control Delay	94.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	108.6	Sum of lost time (s)	13.7
Intersection Capacity Utilization	116.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	658	457	524	1746	76	257	188	128	146	635	188
Future Volume (vph)	143	658	457	524	1746	76	257	188	128	146	635	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5053		1610	3328	1583	1770	3418	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5053		1610	3328	1583	1770	3418	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	154	708	491	563	1877	82	276	202	138	157	683	202
RTOR Reduction (vph)	0	0	333	0	3	0	0	0	113	0	18	0
Lane Group Flow (vph)	154	708	158	563	1956	0	157	321	25	157	867	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	17.0	37.9	37.9	25.1	46.0		21.5	21.5	21.5	15.1	15.1	
Effective Green, g (s)	17.0	37.9	37.9	25.1	46.0		21.5	21.5	21.5	15.1	15.1	
Actuated g/C Ratio	0.14	0.32	0.32	0.21	0.39		0.18	0.18	0.18	0.13	0.13	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	255	1140	510	377	1976		294	608	289	227	438	
v/s Ratio Prot	0.09	0.20		c0.32	c0.39		c0.10	0.10		0.09	c0.25	
v/s Ratio Perm			0.10						0.02			
v/c Ratio	0.60	0.62	0.31	1.49	0.99		0.53	0.53	0.09	0.69	1.98	
Uniform Delay, d1	47.1	33.8	30.0	46.2	35.6		43.5	43.5	39.9	49.0	51.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.0	1.1	0.3	235.6	17.7		1.9	0.8	0.1	8.8	448.6	
Delay (s)	51.1	34.8	30.4	281.9	53.2		45.4	44.3	40.0	57.8	499.8	
Level of Service	D	C	C	F	D		D	D	D	E	F	
Approach Delay (s)		35.1			104.3			43.6			433.2	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	142.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	117.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

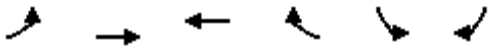
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	884	238	945	1277	33	664	225	105	44	703	113
Future Volume (vph)	28	884	238	945	1277	33	664	225	105	44	703	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3426		1770	3539	1583	1770	1774		1770	1824	
Flt Permitted	0.14	1.00		0.18	1.00	1.00	0.19	1.00		0.31	1.00	
Satd. Flow (perm)	262	3426		341	3539	1583	347	1774		573	1824	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	29	931	251	995	1344	35	699	237	111	46	740	119
RTOR Reduction (vph)	0	10	0	0	0	13	0	21	0	0	7	0
Lane Group Flow (vph)	29	1172	0	995	1344	22	699	327	0	46	852	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	162	2119		210	2189	979	93	476		153	490	
v/s Ratio Prot		0.34			0.38			0.18			0.47	
v/s Ratio Perm	0.11			c2.92		0.01	c2.02			0.08		
v/c Ratio	0.18	0.55		4.74	0.61	0.02	7.52	0.69		0.30	1.74	
Uniform Delay, d1	6.5	8.8		15.2	9.4	5.9	29.2	26.2		23.3	29.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.3		1692.9	0.5	0.0	2954.4	7.8		5.0	340.6	
Delay (s)	7.1	9.2		1708.2	9.9	5.9	2983.7	34.1		28.2	369.8	
Level of Service	A	A		F	A	A	F	C		C	F	
Approach Delay (s)		9.1			721.6			2003.3			352.5	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	747.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	5.56		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	180.0%	ICU Level of Service	H
Analysis Period (min)	15		

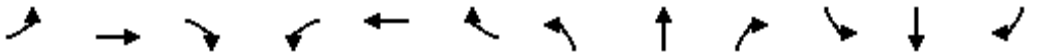
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	226	1006	1789	592	306	393
Future Volume (vph)	226	1006	1789	592	306	393
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	235	1048	1864	617	319	409
RTOR Reduction (vph)	0	0	0	110	0	277
Lane Group Flow (vph)	235	1048	1864	507	319	132
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	17.9	56.3	34.2	34.2	31.0	31.0
Effective Green, g (s)	17.9	56.3	34.2	34.2	31.0	31.0
Actuated g/C Ratio	0.19	0.58	0.35	0.35	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	328	2066	1255	561	569	509
v/s Ratio Prot	c0.13	0.30	c0.53		c0.18	
v/s Ratio Perm				0.32		0.08
v/c Ratio	0.72	0.51	1.49	0.90	0.56	0.26
Uniform Delay, d1	36.9	11.9	31.1	29.5	27.1	24.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.3	0.9	222.7	18.0	4.0	1.2
Delay (s)	44.1	12.7	253.8	47.5	31.0	25.4
Level of Service	D	B	F	D	C	C
Approach Delay (s)		18.5	202.5		27.9	
Approach LOS		B	F		C	

Intersection Summary			
HCM 2000 Control Delay	121.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	96.4	Sum of lost time (s)	13.3
Intersection Capacity Utilization	90.0%	ICU Level of Service	E
Analysis Period (min)	15		

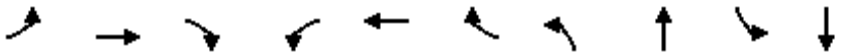
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	595	958	0	0	1026	371	555	816	340	710	0	1468
Future Volume (vph)	595	958	0	0	1026	371	555	816	340	710	0	1468
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	607	978	0	0	1047	379	566	887	347	724	0	1498
RTOR Reduction (vph)	0	0	0	0	0	279	0	0	72	0	0	90
Lane Group Flow (vph)	607	978	0	0	1047	100	509	944	275	724	0	1408
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	40.9	40.9	40.9	23.1		39.7
Effective Green, g (s)	11.7	40.6			24.2	24.2	40.9	40.9	40.9	23.1		39.7
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.34	0.34	0.34	0.19		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	572	601	539	340		922
v/s Ratio Prot	0.18	0.28			c0.21		0.30	c0.54		c0.41		c0.51
v/s Ratio Perm						0.06			0.17			
v/c Ratio	1.82	0.82			1.02	0.31	0.89	1.57	0.51	2.13		1.53
Uniform Delay, d1	54.1	36.3			47.9	40.8	37.4	39.5	31.6	48.5		40.1
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	379.4	6.2			33.6	2.6	15.6	264.8	0.8	518.0		242.6
Delay (s)	433.6	42.5			81.5	43.4	53.0	304.4	32.4	566.5		282.7
Level of Service	F	D			F	D	D	F	C	F		F
Approach Delay (s)		192.3			71.4			180.9			375.2	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	222.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.60		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	135.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	438	313	467	288	157	62	390	2126	89	2902
v/c Ratio	0.79	0.54	0.91	0.67	0.35	0.23	1.14	1.10	0.26	1.49
Control Delay	63.5	53.5	41.1	63.1	54.1	9.2	140.0	89.7	49.0	254.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	53.5	41.1	63.1	54.1	9.2	140.0	89.7	49.0	254.3
Queue Length 50th (ft)	189	128	147	125	64	0	~403	~778	67	~1296
Queue Length 95th (ft)	248	182	#340	171	101	29	#624	#905	122	#1423
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	663	683	551	663	683	368	341	1939	341	1947
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.46	0.85	0.43	0.23	0.17	1.14	1.10	0.26	1.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	480	3	388	39	356	1773	15	2577	362
v/c Ratio	0.85	0.01	0.67	0.36	0.74	0.53	0.17	0.97	0.40
Control Delay	72.6	49.3	10.9	72.9	67.9	15.0	68.9	45.2	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	49.3	10.9	72.9	67.9	15.0	68.9	45.2	12.1
Queue Length 50th (ft)	223	2	0	35	164	280	14	~869	93
Queue Length 95th (ft)	#301	12	99	75	211	432	38	#1088	190
Internal Link Dist (ft)		523		508		721		258	
Turn Bay Length (ft)	470				510		235		
Base Capacity (vph)	580	314	589	139	701	3344	361	2658	915
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.01	0.66	0.28	0.51	0.53	0.04	0.97	0.40

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

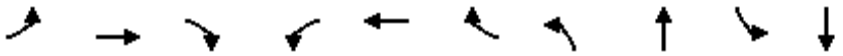
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	160	70	2183	3155
v/c Ratio	1.07	0.86	0.71	1.13
Control Delay	131.3	128.6	4.4	79.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	131.3	128.6	4.4	79.1
Queue Length 50th (ft)	~106	60	230	~1622
Queue Length 95th (ft)	#252	#153	275	#1736
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	150	81	3076	2799
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.07	0.86	0.71	1.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	421	443	264	26	248	293	684	1515	118	3033
v/c Ratio	1.32	0.58	0.55	0.35	0.65	0.64	1.27	0.52	0.66	1.18
Control Delay	213.3	28.3	10.2	79.6	68.4	35.7	182.1	19.3	78.6	114.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	213.3	28.3	10.2	79.6	68.4	35.7	182.1	19.3	78.6	114.3
Queue Length 50th (ft)	~255	100	0	24	116	152	~404	294	105	~1194
Queue Length 95th (ft)	#378	162	91	58	163	246	#550	381	174	#1332
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	318	882	532	75	631	499	539	2933	227	2580
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.32	0.50	0.50	0.35	0.39	0.59	1.27	0.52	0.52	1.18

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	355	119	478	1511	27	2988
v/c Ratio	0.73	0.57	0.46	0.69	0.51	0.10	1.53
Control Delay	44.2	7.2	28.2	32.7	11.9	27.8	265.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	7.2	28.2	32.7	11.9	27.8	265.3
Queue Length 50th (ft)	85	0	40	105	109	11	~751
Queue Length 95th (ft)	#176	63	89	146	244	32	#880
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	292	634	270	826	2941	378	1950
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.56	0.44	0.58	0.51	0.07	1.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

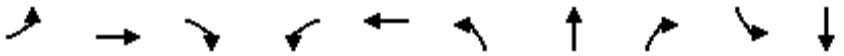
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	1048	147	370	1295	77	205	215	261	219	365
v/c Ratio	0.38	0.81	0.22	0.92	1.31	0.09	1.47	0.41	0.41	0.84	0.71
Control Delay	55.7	36.3	4.5	71.8	170.9	5.9	279.9	36.0	6.2	66.9	44.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.7	36.3	4.5	71.8	170.9	5.9	279.9	36.0	6.2	66.9	44.3
Queue Length 50th (ft)	37	341	0	260	~1196	7	~205	127	0	149	233
Queue Length 95th (ft)	78	423	40	#455	#1511	32	#363	205	63	#301	#357
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	412	1483	749	412	991	867	139	520	630	260	513
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.71	0.20	0.90	1.31	0.09	1.47	0.41	0.41	0.84	0.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	154	708	491	563	1959	157	321	138	157	885
v/c Ratio	0.61	0.62	0.58	1.49	0.99	0.53	0.53	0.34	0.69	1.94
Control Delay	58.3	36.6	5.6	269.2	53.9	51.4	47.3	9.4	67.0	459.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	58.3	36.6	5.6	269.2	53.9	51.5	47.3	9.4	67.0	459.2
Queue Length 50th (ft)	108	233	0	~556	503	115	118	0	110	~515
Queue Length 95th (ft)	195	320	76	#928	#756	212	185	56	#246	#770
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	377	1691	1013	377	2419	453	937	544	226	456
Starvation Cap Reductn	0	0	0	0	0	16	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.42	0.48	1.49	0.81	0.36	0.34	0.25	0.69	1.94

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

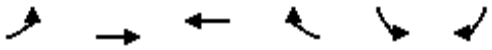
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	1182	995	1344	35	699	348	46	859
v/c Ratio	0.18	0.56	4.74	0.61	0.04	7.60	0.70	0.30	1.73
Control Delay	9.8	9.9	1703.6	10.9	2.3	2998.7	32.9	29.6	360.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	9.9	1703.6	10.9	2.3	2998.7	32.9	29.6	360.4
Queue Length 50th (ft)	6	157	~853	194	0	~664	143	18	~650
Queue Length 95th (ft)	19	208	#1085	254	10	#873	#238	49	#873
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	162	2129	210	2189	992	92	497	154	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.56	4.74	0.61	0.04	7.60	0.70	0.30	1.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	235	1048	1864	617	319	409
v/c Ratio	0.72	0.51	1.49	0.92	0.56	0.52
Control Delay	48.7	12.9	249.9	43.8	31.8	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	12.9	249.9	43.8	31.8	5.2
Queue Length 50th (ft)	136	185	~835	274	160	0
Queue Length 95th (ft)	203	236	#1055	#555	252	65
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	458	2136	1255	671	568	786
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.49	1.49	0.92	0.56	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	607	978	1047	379	509	944	347	724	1498
v/c Ratio	1.82	0.82	1.02	0.63	0.89	1.57	0.57	2.13	1.49
Control Delay	410.7	43.0	80.9	11.5	56.7	294.7	25.8	543.6	253.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	410.7	43.0	80.9	11.5	56.7	294.7	25.8	543.6	253.7
Queue Length 50th (ft)	~365	362	~315	19	390	~1091	149	~892	~875
Queue Length 95th (ft)	#480	447	#408	116	#601	#1354	248	#1126	#1027
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	597	572	601	611	340	1007
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.82	0.82	1.02	0.63	0.89	1.57	0.57	2.13	1.49

Intersection Summary

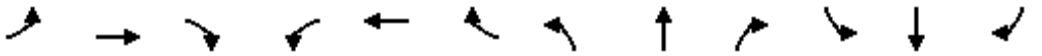
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	508	318	589	181	235	70	484	2255	297	148	1796	326
Future Volume (vph)	508	318	589	181	235	70	484	2255	297	148	1796	326
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4996		1770	4968	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4996		1770	4968	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	571	357	662	203	264	79	544	2534	334	166	2018	366
RTOR Reduction (vph)	0	0	265	0	0	70	0	11	0	0	17	0
Lane Group Flow (vph)	571	357	397	203	264	9	544	2857	0	166	2367	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	24.6	26.9	26.9	13.1	15.4	15.4	25.0	50.0		25.0	50.0	
Effective Green, g (s)	24.6	26.9	26.9	13.1	15.4	15.4	25.0	50.0		25.0	50.0	
Actuated g/C Ratio	0.19	0.20	0.20	0.10	0.12	0.12	0.19	0.38		0.19	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	639	721	322	340	412	184	335	1892		335	1881	
v/s Ratio Prot	c0.17	0.10		0.06	0.07		c0.31	c0.57		0.09	0.48	
v/s Ratio Perm			c0.25			0.01						
v/c Ratio	0.89	0.50	1.23	0.60	0.64	0.05	1.62	1.51		0.50	1.26	
Uniform Delay, d1	52.4	46.5	52.5	56.9	55.7	51.8	53.5	41.0		47.9	41.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.9	0.5	128.7	2.8	3.4	0.1	294.1	232.3		5.2	120.7	
Delay (s)	67.3	47.1	181.3	59.7	59.0	51.9	347.6	273.3		53.0	161.7	
Level of Service	E	D	F	E	E	D	F	F		D	F	
Approach Delay (s)		110.2			58.3			285.1			154.6	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	194.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	132.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

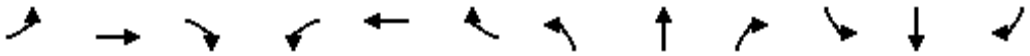
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	491	6	392	14	18	16	526	2366	2	63	1860	487
Future Volume (vph)	491	6	392	14	18	16	526	2366	2	63	1860	487
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1823	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1823	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	496	6	396	14	18	16	531	2390	2	64	1879	492
RTOR Reduction (vph)	0	0	330	0	0	15	0	0	0	0	0	181
Lane Group Flow (vph)	496	6	66	0	32	1	531	2392	0	64	1879	311
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	23.5	23.5	23.5		6.9	6.9	26.3	84.4		9.2	67.3	67.3
Effective Green, g (s)	23.5	23.5	23.5		6.9	6.9	26.3	84.4		9.2	67.3	67.3
Actuated g/C Ratio	0.17	0.17	0.17		0.05	0.05	0.19	0.59		0.06	0.47	0.47
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	568	308	261		88	76	635	3022		114	2410	750
v/s Ratio Prot	c0.14	0.00			c0.02		c0.15	c0.47		0.04	0.37	
v/s Ratio Perm			0.04			0.00						0.20
v/c Ratio	0.87	0.02	0.25		0.36	0.01	0.84	0.79		0.56	0.78	0.41
Uniform Delay, d1	57.8	49.6	51.6		65.4	64.3	55.8	22.1		64.4	31.2	24.4
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.9	0.0	0.5		2.5	0.1	9.4	2.2		6.2	2.6	1.7
Delay (s)	71.7	49.6	52.1		68.0	64.4	65.1	24.3		70.6	33.7	26.1
Level of Service	E	D	D		E	E	E	C		E	C	C
Approach Delay (s)		62.9			66.8			31.7			33.2	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

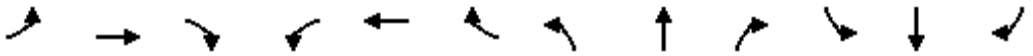
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	0	73	0	0	0	109	2956	0	0	2225	92
Future Volume (vph)	28	0	73	0	0	0	109	2956	0	0	2225	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.90					1.00	1.00			0.99	
Flt Protected		0.99					0.95	1.00			1.00	
Satd. Flow (prot)		1658					1770	3539			3518	
Flt Permitted		0.99					0.95	1.00			1.00	
Satd. Flow (perm)		1658					1770	3539			3518	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	29	0	76	0	0	0	114	3079	0	0	2318	96
RTOR Reduction (vph)	0	70	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	35	0	0	0	0	114	3079	0	0	2413	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		7.3					11.2	75.4			60.2	
Effective Green, g (s)		7.3					11.2	75.4			60.2	
Actuated g/C Ratio		0.08					0.12	0.82			0.66	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		131					216	2909			2309	
v/s Ratio Prot							0.06	c0.87			0.69	
v/s Ratio Perm		0.02										
v/c Ratio		0.27					0.53	1.06			1.04	
Uniform Delay, d1		39.7					37.8	8.1			15.8	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		1.1					2.3	34.8			31.7	
Delay (s)		40.8					40.1	42.9			47.5	
Level of Service		D					D	D			D	
Approach Delay (s)		40.8			0.0			42.8			47.5	
Approach LOS		D			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		

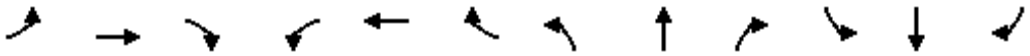
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	682	191	797	14	154	145	672	2239	23	153	1661	474
Future Volume (vph)	682	191	797	14	154	145	672	2239	23	153	1661	474
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.90	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3046	1441	1770	3539	1583	3433	5077		1770	4916	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3046	1441	1770	3539	1583	3433	5077		1770	4916	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	703	197	822	14	159	149	693	2308	24	158	1712	489
RTOR Reduction (vph)	0	261	261	0	0	88	0	0	0	0	33	0
Lane Group Flow (vph)	703	347	150	14	159	61	693	2332	0	158	2168	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	25.0	37.0	37.0	2.0	14.0	27.0	25.0	70.0		13.0	58.0	
Effective Green, g (s)	25.0	37.0	37.0	2.0	14.0	27.0	25.0	70.0		13.0	58.0	
Actuated g/C Ratio	0.18	0.27	0.27	0.01	0.10	0.19	0.18	0.50		0.09	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	617	810	383	25	356	353	617	2556		165	2051	
v/s Ratio Prot	c0.20	c0.11		0.01	0.04	0.02	c0.20	0.46		0.09	c0.44	
v/s Ratio Perm			0.10			0.02						
v/c Ratio	1.14	0.43	0.39	0.56	0.45	0.17	1.12	0.91		0.96	1.06	
Uniform Delay, d1	57.0	42.2	41.8	68.1	58.9	46.7	57.0	31.7		62.7	40.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	81.2	0.4	0.7	25.6	0.9	0.2	75.1	6.3		56.9	37.0	
Delay (s)	138.2	42.6	42.5	93.7	59.7	46.9	132.1	38.0		119.6	77.5	
Level of Service	F	D	D	F	E	D	F	D		F	E	
Approach Delay (s)		81.6			55.3			59.5			80.3	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	71.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	139.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		

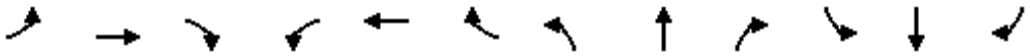
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	247	21	430	50	11	19	378	2860	46	31	1730	150
Future Volume (vph)	247	21	430	50	11	19	378	2860	46	31	1730	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1749		3433	5073		1770	5024	
Flt Permitted		0.72	1.00		0.55		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1350	1583		997		3433	5073		1770	5024	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	260	22	453	53	12	20	398	3011	48	33	1821	158
RTOR Reduction (vph)	0	0	330	0	15	0	0	2	0	0	12	0
Lane Group Flow (vph)	0	282	123	0	70	0	398	3057	0	33	1967	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.9	16.9		16.9		14.0	40.3		4.8	29.1	
Effective Green, g (s)		16.9	16.9		16.9		14.0	40.3		4.8	29.1	
Actuated g/C Ratio		0.23	0.23		0.23		0.19	0.54		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		305	357		225		642	2733		113	1954	
v/s Ratio Prot							c0.12	c0.60		0.02	0.39	
v/s Ratio Perm		c0.21	0.08		0.07							
v/c Ratio		0.92	0.35		0.31		0.62	1.12		0.29	1.01	
Uniform Delay, d1		28.3	24.3		24.1		28.0	17.2		33.4	22.8	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		32.3	0.6		0.8		1.8	59.0		1.4	22.0	
Delay (s)		60.6	24.9		24.9		29.7	76.2		34.8	44.8	
Level of Service		E	C		C		C	E		C	D	
Approach Delay (s)		38.6			24.9			70.9			44.6	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	58.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	97.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	8	11	91	4	92	21	641	57	66	615	11
Future Volume (vph)	11	8	11	91	4	92	21	641	57	66	615	11
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
Hourly flow rate (vph)	12	9	12	100	4	101	23	704	63	73	676	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	205	790	761
Volume Left (vph)	12	100	23	73
Volume Right (vph)	12	101	63	12
Hadj (s)	-0.11	-0.16	-0.01	0.04
Departure Headway (s)	7.9	7.0	5.8	5.8
Degree Utilization, x	0.07	0.40	1.27	1.23
Capacity (veh/h)	432	501	634	627
Control Delay (s)	11.5	14.6	152.2	138.2
Approach Delay (s)	11.5	14.6	152.2	138.2
Approach LOS	B	B	F	F

Intersection Summary				
Delay	127.9			
Level of Service	F			
Intersection Capacity Utilization	86.4%	ICU Level of Service	E	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	1229	147	411	1044	55	200	446	452	124	227	57
Future Volume (vph)	121	1229	147	411	1044	55	200	446	452	124	227	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1806	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.36	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	671	1863	1583	248	1806	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	125	1267	152	424	1076	57	206	460	466	128	234	59
RTOR Reduction (vph)	0	0	80	0	0	28	0	0	292	0	8	0
Lane Group Flow (vph)	125	1267	72	424	1076	29	206	460	174	128	285	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	13.3	44.1	44.1	25.0	55.8	55.8	30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	13.3	44.1	44.1	25.0	55.8	55.8	30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.12	0.39	0.39	0.22	0.49	0.49	0.27	0.27	0.27	0.27	0.27	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	208	1383	618	392	921	783	178	495	421	65	480	
v/s Ratio Prot	0.07	0.36		c0.24	c0.58			0.25			0.16	
v/s Ratio Perm			0.05			0.02	0.31		0.11	c0.52		
v/c Ratio	0.60	0.92	0.12	1.08	1.17	0.04	1.16	0.93	0.41	1.97	0.59	
Uniform Delay, d1	47.2	32.6	21.9	43.9	28.5	14.7	41.4	40.4	34.1	41.4	36.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.8	9.7	0.1	69.1	87.5	0.1	116.1	23.8	0.7	486.6	5.3	
Delay (s)	52.1	42.3	22.0	113.0	116.0	14.8	157.5	64.2	34.8	528.0	41.4	
Level of Service	D	D	C	F	F	B	F	E	C	F	D	
Approach Delay (s)		41.1			111.5			69.1			189.3	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	84.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.41		
Actuated Cycle Length (s)	112.8	Sum of lost time (s)	13.7
Intersection Capacity Utilization	108.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	378	1607	247	183	1068	161	611	857	476	138	234	154
Future Volume (vph)	378	1607	247	183	1068	161	611	857	476	138	234	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4985		1610	3367	1583	1770	3328	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4985		1610	3367	1583	1770	3328	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	406	1728	266	197	1148	173	657	922	512	148	252	166
RTOR Reduction (vph)	0	0	77	0	14	0	0	0	234	0	75	0
Lane Group Flow (vph)	406	1728	189	197	1307	0	512	1067	278	148	343	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.0	56.1	56.1	20.2	51.3		33.0	33.0	33.0	15.0	15.0	
Effective Green, g (s)	25.0	56.1	56.1	20.2	51.3		33.0	33.0	33.0	15.0	15.0	
Actuated g/C Ratio	0.18	0.39	0.39	0.14	0.36		0.23	0.23	0.23	0.11	0.11	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	310	1395	624	251	1797		373	780	367	186	350	
v/s Ratio Prot	c0.23	c0.49		0.11	0.26		c0.32	0.32		0.08	c0.10	
v/s Ratio Perm			0.12						0.18			
v/c Ratio	1.31	1.24	0.30	0.78	0.73		1.37	1.37	0.76	0.80	0.98	
Uniform Delay, d1	58.7	43.1	29.7	59.0	39.4		54.7	54.7	50.9	62.2	63.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	160.7	113.7	0.3	14.8	1.5		183.9	173.8	8.7	20.5	42.1	
Delay (s)	219.3	156.8	29.9	73.7	40.9		238.6	228.4	59.7	82.7	105.6	
Level of Service	F	F	C	E	D		F	F	E	F	F	
Approach Delay (s)		153.3			45.2			189.6			99.6	
Approach LOS		F			D			F			F	

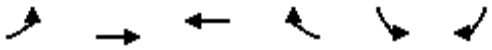
Intersection Summary			
HCM 2000 Control Delay	135.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	142.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	1397	232	754	1096	58	944	806	41	30	342	77
Future Volume (vph)	65	1397	232	754	1096	58	944	806	41	30	342	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3464		1770	3539	1583	1770	1849		1770	1811	
Flt Permitted	0.19	1.00		0.08	1.00	1.00	0.19	1.00		0.19	1.00	
Satd. Flow (perm)	356	3464		151	3539	1583	347	1849		347	1811	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	68	1471	244	794	1154	61	994	848	43	32	360	81
RTOR Reduction (vph)	0	17	0	0	0	8	0	2	0	0	10	0
Lane Group Flow (vph)	68	1698	0	794	1154	53	994	889	0	32	431	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	220	2143		93	2189	979	93	496		93	486	
v/s Ratio Prot		0.49			0.33			0.48			0.24	
v/s Ratio Perm	0.19			c5.27		0.03	c2.87			0.09		
v/c Ratio	0.31	0.79		8.54	0.53	0.05	10.69	1.79		0.34	0.89	
Uniform Delay, d1	7.2	11.4		15.2	8.6	6.0	29.2	29.2		23.6	28.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	2.1		3413.7	0.2	0.0	4380.9	364.4		9.8	20.6	
Delay (s)	8.0	13.5		3429.0	8.9	6.0	4410.2	393.7		33.4	48.7	
Level of Service	A	B		F	A	A	F	F		C	D	
Approach Delay (s)		13.3			1360.5			2511.7			47.6	
Approach LOS		B			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	1221.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	9.15		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	177.8%	ICU Level of Service	H
Analysis Period (min)	15		

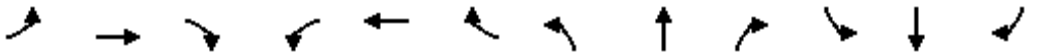
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	440	1733	1592	275	517	363
Future Volume (vph)	440	1733	1592	275	517	363
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	458	1805	1658	286	539	378
RTOR Reduction (vph)	0	0	0	62	0	259
Lane Group Flow (vph)	458	1805	1658	224	539	119
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	1	6	2		8	
Permitted Phases				2		8
Actuated Green, G (s)	25.0	58.2	29.0	29.0	31.0	31.0
Effective Green, g (s)	25.0	58.2	29.0	29.0	31.0	31.0
Actuated g/C Ratio	0.25	0.59	0.30	0.30	0.32	0.32
Clearance Time (s)	4.2	4.9	4.9	4.9	4.2	4.2
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	450	2095	1044	467	558	499
v/s Ratio Prot	c0.26	0.51	c0.47		c0.30	
v/s Ratio Perm				0.14		0.08
v/c Ratio	1.02	0.86	1.59	0.48	0.97	0.24
Uniform Delay, d1	36.6	16.7	34.6	28.5	33.1	24.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	47.0	5.0	269.2	0.8	30.6	1.1
Delay (s)	83.6	21.6	303.9	29.2	63.7	26.0
Level of Service	F	C	F	C	E	C
Approach Delay (s)		34.2	263.5		48.2	
Approach LOS		C	F		D	

Intersection Summary			
HCM 2000 Control Delay	123.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	13.3
Intersection Capacity Utilization	108.1%	ICU Level of Service	G
Analysis Period (min)	15		

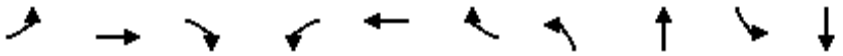
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1228	932	0	0	1104	789	194	844	119	614	0	1102
Future Volume (vph)	1228	932	0	0	1104	789	194	844	119	614	0	1102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1253	951	0	0	1127	805	198	917	121	627	0	1124
RTOR Reduction (vph)	0	0	0	0	0	190	0	0	63	0	0	445
Lane Group Flow (vph)	1253	951	0	0	1127	615	178	937	58	627	0	679
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Effective Green, g (s)	21.3	49.2			23.2	23.2	48.9	48.9	48.9	16.5		42.7
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.38	0.38	0.38	0.13		0.33
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	632	665	595	224		915
v/s Ratio Prot	c0.36	0.27			0.22		0.11	c0.53		c0.35		0.24
v/s Ratio Perm						c0.39			0.04			
v/c Ratio	2.23	0.71			1.24	2.18	0.28	1.41	0.10	2.80		0.74
Uniform Delay, d1	54.4	34.3			53.4	53.4	28.3	40.5	26.3	56.8		38.8
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	559.0	3.2			118.5	543.3	0.2	193.0	0.1	821.9		3.3
Delay (s)	613.4	37.6			171.9	596.7	28.5	233.5	26.3	878.7		42.0
Level of Service	F	D			F	F	C	F	C	F		D
Approach Delay (s)		364.9			348.9			183.7			341.6	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	323.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.94		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	150.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



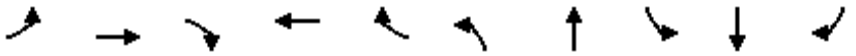
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	571	357	662	203	264	79	544	2868	166	2384
v/c Ratio	0.89	0.50	1.13	0.60	0.64	0.31	1.62	1.51	0.50	1.25
Control Delay	70.3	49.6	101.4	64.6	63.1	14.0	329.0	261.5	54.5	154.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.3	49.6	101.4	64.6	63.1	14.0	329.0	261.5	54.5	154.5
Queue Length 50th (ft)	247	143	~414	87	115	0	~670	~1255	129	~934
Queue Length 95th (ft)	#358	198	#655	128	161	46	#923	#1391	209	#1069
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	650	720	587	650	670	364	335	1905	335	1900
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.50	1.13	0.31	0.39	0.22	1.62	1.51	0.50	1.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
2: Mission Blvd & Tennyson Rd



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	496	6	396	32	16	531	2392	64	1879	492
v/c Ratio	0.87	0.02	0.67	0.31	0.09	0.84	0.78	0.49	0.77	0.52
Control Delay	74.9	49.5	10.8	71.4	1.1	68.0	25.4	75.0	34.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.9	49.5	10.8	71.4	1.1	68.0	25.4	75.0	34.6	10.2
Queue Length 50th (ft)	232	5	0	29	0	245	625	58	537	84
Queue Length 95th (ft)	#318	18	100	64	0	306	777	106	644	202
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	596	141	201	704	3081	361	2442	939
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.02	0.66	0.23	0.08	0.75	0.78	0.18	0.77	0.52

Intersection Summary

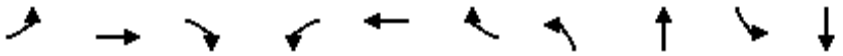
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	105	114	3079	2414
v/c Ratio	0.52	0.53	1.06	1.05
Control Delay	25.3	47.2	45.9	50.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	25.3	47.2	45.9	50.1
Queue Length 50th (ft)	16	63	~1035	~803
Queue Length 95th (ft)	68	119	#1270	#1068
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	248	967	2908	2308
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	0.12	1.06	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	703	608	411	14	159	149	693	2332	158	2201
v/c Ratio	1.12	0.56	0.63	0.22	0.53	0.36	1.10	0.90	0.94	1.04
Control Delay	123.4	19.6	12.4	72.9	66.6	16.8	118.2	35.9	116.1	67.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.4	19.6	12.4	72.9	66.6	16.8	118.2	35.9	116.1	67.8
Queue Length 50th (ft)	~368	98	39	12	72	29	~358	663	141	~757
Queue Length 95th (ft)	#512	177	172	38	111	91	#502	780	#293	#891
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	628	1242	712	64	648	416	628	2602	168	2120
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.49	0.58	0.22	0.25	0.36	1.10	0.90	0.94	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	282	453	85	398	3059	33	1979
v/c Ratio	0.93	0.66	0.36	0.62	1.06	0.12	1.01
Control Delay	67.8	9.0	24.5	32.1	54.9	28.1	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	9.0	24.5	32.1	54.9	28.1	47.0
Queue Length 50th (ft)	128	10	25	88	393	13	~330
Queue Length 95th (ft)	#269	90	65	123	#803	37	#498
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	306	688	241	826	2888	378	1966
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.66	0.35	0.48	1.06	0.09	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

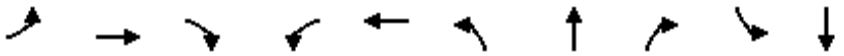
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	125	1267	152	424	1076	57	206	460	466	128	293
v/c Ratio	0.60	0.92	0.22	1.08	1.17	0.07	1.16	0.93	0.65	1.94	0.60
Control Delay	59.0	44.1	6.2	111.2	115.8	5.1	154.1	67.5	11.3	504.5	41.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.0	44.1	6.2	111.2	115.8	5.1	154.1	67.5	11.3	504.5	41.0
Queue Length 50th (ft)	88	452	9	~350	~932	1	~179	330	38	~145	181
Queue Length 95th (ft)	144	#590	51	#548	#1250	24	#330	#529	148	#270	274
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	392	1412	710	392	921	810	178	495	713	66	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.90	0.21	1.08	1.17	0.07	1.16	0.93	0.65	1.94	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	406	1728	266	197	1321	512	1067	512	148	418
v/c Ratio	1.31	1.24	0.38	0.78	0.73	1.37	1.37	0.85	0.80	0.98
Control Delay	204.2	151.9	17.7	80.5	41.5	224.4	214.4	35.7	91.6	89.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.6	1.7	10.8	0.0	0.0
Total Delay	204.2	151.9	17.7	80.5	41.5	226.9	216.1	46.6	91.6	89.6
Queue Length 50th (ft)	~485	~1052	88	179	381	~692	~720	204	137	167
Queue Length 95th (ft)	#720	#1238	170	268	437	#972	#897	#417	#262	#294
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	311	1393	700	311	1976	373	780	600	186	426
Starvation Cap Reductn	0	0	0	0	0	77	179	73	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	1.24	0.38	0.63	0.67	1.73	1.78	0.97	0.80	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	68	1715	794	1154	61	994	891	32	441
v/c Ratio	0.31	0.79	8.54	0.53	0.06	10.80	1.79	0.35	0.89
Control Delay	11.9	14.6	3420.1	9.7	4.7	4438.7	385.4	36.0	49.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	14.6	3420.1	9.7	4.7	4438.7	385.4	36.0	49.8
Queue Length 50th (ft)	14	295	~761	153	7	~983	~687	13	205
Queue Length 95th (ft)	41	390	#979	202	21	#1215	#911	41	#375
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	220	2160	93	2189	987	92	499	92	496
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.79	8.54	0.53	0.06	10.80	1.79	0.35	0.89

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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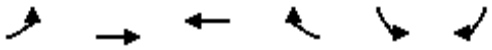
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	458	1805	1658	286	539	378
v/c Ratio	1.02	0.86	1.59	0.54	0.97	0.50
Control Delay	84.8	22.2	296.9	24.1	65.1	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.8	22.2	296.9	24.1	65.1	5.2
Queue Length 50th (ft)	~296	459	~783	102	330	0
Queue Length 95th (ft)	#497	577	#920	185	#542	64
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	450	2095	1044	529	558	758
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.86	1.59	0.54	0.97	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	1253	951	1127	805	178	937	121	627	1124
v/c Ratio	2.23	0.71	1.24	1.71	0.28	1.41	0.18	2.80	0.83
Control Delay	584.8	37.9	162.5	350.4	29.8	225.7	7.8	842.9	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	584.8	37.9	162.5	350.4	29.8	225.7	7.8	842.9	22.0
Queue Length 50th (ft)	~876	355	~431	~834	109	~1113	11	~901	222
Queue Length 95th (ft)	#1012	434	#527	#1084	171	#1381	52	#1134	332
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	472	632	665	658	224	1357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.23	0.71	1.24	1.71	0.28	1.41	0.18	2.80	0.83

Intersection Summary

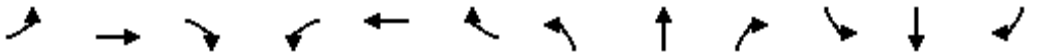
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	276	413	257	136	54	345	1664	262	80	2398	196
Future Volume (vph)	383	276	413	257	136	54	345	1664	262	80	2398	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5028	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5028	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	430	310	464	289	153	61	388	1870	294	90	2694	220
RTOR Reduction (vph)	0	0	254	0	0	53	0	14	0	0	6	0
Lane Group Flow (vph)	430	310	210	289	153	8	388	2150	0	90	2908	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	20.8	21.3	21.3	16.2	16.7	16.7	25.1	50.2		25.1	50.2	
Effective Green, g (s)	20.8	21.3	21.3	16.2	16.7	16.7	25.1	50.2		25.1	50.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.13	0.13	0.19	0.39		0.19	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	550	580	259	428	455	203	342	1926		342	1944	
v/s Ratio Prot	c0.13	0.09		0.08	0.04		c0.22	0.43		0.05	c0.58	
v/s Ratio Perm			c0.13			0.00						
v/c Ratio	0.78	0.53	0.81	0.68	0.34	0.04	1.13	1.12		0.26	1.50	
Uniform Delay, d1	52.3	49.7	52.3	54.3	51.5	49.5	52.4	39.8		44.5	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	1.0	17.2	4.2	0.4	0.1	90.3	60.1		1.9	225.9	
Delay (s)	59.5	50.7	69.5	58.5	51.9	49.6	142.6	99.9		46.4	265.7	
Level of Service	E	D	E	E	D	D	F	F		D	F	
Approach Delay (s)		61.1			55.4			106.4			259.1	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	158.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	129.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	484	9	400	24	32	10	380	1757	5	21	2545	371
Future Volume (vph)	484	9	400	24	32	10	380	1757	5	21	2545	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1824	1583	3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1824	1583	3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	489	9	404	24	32	10	384	1775	5	21	2571	375
RTOR Reduction (vph)	0	0	332	0	0	9	0	0	0	0	0	95
Lane Group Flow (vph)	489	9	72	0	56	1	384	1780	0	21	2571	280
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	23.4	23.4	23.4		8.0	8.0	21.1	87.7		4.9	71.5	71.5
Effective Green, g (s)	23.4	23.4	23.4		8.0	8.0	21.1	87.7		4.9	71.5	71.5
Actuated g/C Ratio	0.16	0.16	0.16		0.06	0.06	0.15	0.62		0.03	0.50	0.50
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	565	307	260		102	89	510	3139		61	2560	797
v/s Ratio Prot	c0.14	0.00			c0.03		c0.11	0.35		0.01	c0.51	
v/s Ratio Perm			0.05			0.00						0.18
v/c Ratio	0.87	0.03	0.28		0.55	0.01	0.75	0.57		0.34	1.00	0.35
Uniform Delay, d1	57.8	49.8	51.9		65.2	63.2	58.0	16.0		67.0	35.2	21.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.1	0.0	0.6		5.9	0.0	6.2	0.7		3.4	18.8	1.2
Delay (s)	70.8	49.8	52.5		71.2	63.3	64.2	16.7		70.3	54.1	22.5
Level of Service	E	D	D		E	E	E	B		E	D	C
Approach Delay (s)		62.4			70.0			25.1			50.2	
Approach LOS		E			E			C			D	

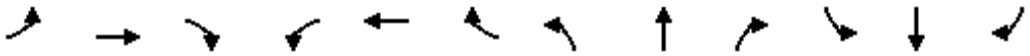
Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	1	88	44	2	32	67	2100	27	18	2979	40
Future Volume (vph)	62	1	88	44	2	32	67	2100	27	18	2979	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.92			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1682			1778	1583	1770	3533		1770	3532	
Flt Permitted		0.84			0.49	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1449			908	1583	1770	3533		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	1	92	46	2	33	70	2188	28	19	3103	42
RTOR Reduction (vph)	0	37	0	0	0	29	0	0	0	0	0	0
Lane Group Flow (vph)	0	121	0	0	48	4	70	2216	0	19	3145	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		10.0			10.0	10.0	7.6	66.5		2.9	61.8	
Effective Green, g (s)		10.0			10.0	10.0	7.6	66.5		2.9	61.8	
Actuated g/C Ratio		0.11			0.11	0.11	0.08	0.72		0.03	0.67	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		156			98	171	145	2542		55	2362	
v/s Ratio Prot							c0.04	c0.63		0.01	c0.89	
v/s Ratio Perm		c0.08			0.05	0.00						
v/c Ratio		0.78			0.49	0.02	0.48	0.87		0.35	1.33	
Uniform Delay, d1		40.1			38.8	36.8	40.5	9.7		43.8	15.3	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		21.3			3.8	0.0	2.5	4.5		3.8	152.1	
Delay (s)		61.4			42.6	36.9	43.0	14.2		47.6	167.4	
Level of Service		E			D	D	D	B		D	F	
Approach Delay (s)		61.4			40.3			15.1			166.7	
Approach LOS		E			D			B			F	

Intersection Summary			
HCM 2000 Control Delay	101.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	92.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

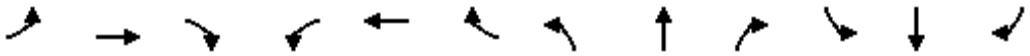
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	417	167	496	25	232	286	639	1479	11	113	2104	872
Future Volume (vph)	417	167	496	25	232	286	639	1479	11	113	2104	872
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3086	1441	1770	3539	1583	3433	5080		1770	4862	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3086	1441	1770	3539	1583	3433	5080		1770	4862	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	430	172	511	26	239	295	659	1525	11	116	2169	899
RTOR Reduction (vph)	0	188	207	0	0	86	0	0	0	0	47	0
Lane Group Flow (vph)	430	240	48	26	239	209	659	1536	0	116	3021	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	14.0	26.8	26.8	3.6	16.4	30.4	21.1	80.1		14.0	73.0	
Effective Green, g (s)	14.0	26.8	26.8	3.6	16.4	30.4	21.1	80.1		14.0	73.0	
Actuated g/C Ratio	0.10	0.19	0.19	0.03	0.12	0.21	0.15	0.57		0.10	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	584	272	45	410	384	511	2875		175	2508	
v/s Ratio Prot	c0.13	0.08		0.01	0.07	c0.05	c0.19	0.30		0.07	c0.62	
v/s Ratio Perm			0.03			0.08						
v/c Ratio	1.27	0.41	0.18	0.58	0.58	0.55	1.29	0.53		0.66	1.20	
Uniform Delay, d1	63.8	50.4	48.1	68.2	59.3	49.4	60.2	19.1		61.5	34.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	142.1	0.5	0.3	16.7	2.1	1.6	144.5	0.7		9.1	96.1	
Delay (s)	205.9	50.9	48.4	84.9	61.4	51.0	204.7	19.8		70.6	130.4	
Level of Service	F	D	D	F	E	D	F	B		E	F	
Approach Delay (s)		110.2			57.0			75.3			128.2	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	103.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	110.8%	ICU Level of Service	H
Analysis Period (min)	15		

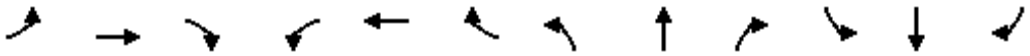
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	20	337	69	19	24	456	1400	37	26	2738	114
Future Volume (vph)	170	20	337	69	19	24	456	1400	37	26	2738	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783	1583		1755		3433	5066		1770	5055	
Flt Permitted		0.69	1.00		0.63		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1289	1583		1132		3433	5066		1770	5055	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	21	355	73	20	25	480	1474	39	27	2882	120
RTOR Reduction (vph)	0	0	279	0	13	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	200	76	0	105	0	480	1510	0	27	2996	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Effective Green, g (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Actuated g/C Ratio		0.21	0.21		0.21		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		275	338		242		697	2790		113	1946	
v/s Ratio Prot							c0.14	0.30		0.02	c0.59	
v/s Ratio Perm		c0.16	0.05		0.09							
v/c Ratio		0.73	0.22		0.43		0.69	0.54		0.24	1.54	
Uniform Delay, d1		27.4	24.3		25.5		27.6	10.8		33.3	23.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.2	0.3		1.2		2.8	0.8		1.1	245.5	
Delay (s)		36.6	24.6		26.7		30.5	11.5		34.4	268.5	
Level of Service		D	C		C		C	B		C	F	
Approach Delay (s)		28.9			26.7			16.1			266.4	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	150.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

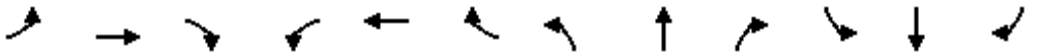
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	3	11	69	0	70	5	594	70	83	658	11
Future Volume (vph)	13	3	11	69	0	70	5	594	70	83	658	11
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
Hourly flow rate (vph)	14	3	12	76	0	77	5	653	77	91	723	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	153	735	826
Volume Left (vph)	14	76	5	91
Volume Right (vph)	12	77	77	12
Hadj (s)	-0.12	-0.17	-0.03	0.05
Departure Headway (s)	7.6	7.0	5.5	5.6
Degree Utilization, x	0.06	0.30	1.12	1.28
Capacity (veh/h)	451	502	661	658
Control Delay (s)	11.1	12.9	95.0	155.1
Approach Delay (s)	11.1	12.9	95.0	155.1
Approach LOS	B	B	F	F

Intersection Summary				
Delay	114.9			
Level of Service	F			
Intersection Capacity Utilization	96.0%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	999	144	366	1255	76	202	209	258	214	308	58
Future Volume (vph)	50	999	144	366	1255	76	202	209	258	214	308	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1818	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.25	1.00	1.00	0.50	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	462	1863	1583	932	1818	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	52	1030	148	377	1294	78	208	215	266	221	318	60
RTOR Reduction (vph)	0	0	93	0	0	26	0	0	192	0	6	0
Lane Group Flow (vph)	52	1030	55	377	1294	52	208	215	74	221	372	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	7.3	40.1	40.1	24.8	57.6	57.6	30.1	30.1	30.1	30.1	30.1	
Effective Green, g (s)	7.3	40.1	40.1	24.8	57.6	57.6	30.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.07	0.37	0.37	0.23	0.53	0.53	0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	118	1305	583	403	987	838	127	515	438	258	503	
v/s Ratio Prot	0.03	0.29		c0.21	c0.69			0.12			0.20	
v/s Ratio Perm			0.03			0.03	c0.45		0.05	0.24		
v/c Ratio	0.44	0.79	0.09	0.94	1.31	0.06	1.64	0.42	0.17	0.86	0.74	
Uniform Delay, d1	48.7	30.5	22.4	41.2	25.6	12.4	39.3	32.1	29.8	37.3	35.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	3.3	0.1	28.8	147.3	0.1	319.7	0.5	0.2	28.8	9.4	
Delay (s)	51.4	33.8	22.5	70.0	172.8	12.6	359.0	32.7	30.0	66.1	45.2	
Level of Service	D	C	C	E	F	B	F	C	C	E	D	
Approach Delay (s)		33.2			143.5			130.1			52.9	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	96.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	108.7	Sum of lost time (s)	13.7
Intersection Capacity Utilization	117.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	688	464	525	1746	78	242	180	126	149	630	186
Future Volume (vph)	147	688	464	525	1746	78	242	180	126	149	630	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5053		1610	3329	1583	1770	3418	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5053		1610	3329	1583	1770	3418	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	158	740	499	565	1877	84	260	194	135	160	677	200
RTOR Reduction (vph)	0	0	335	0	3	0	0	0	111	0	18	0
Lane Group Flow (vph)	158	740	164	565	1958	0	148	306	24	160	859	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	17.2	38.5	38.5	25.1	46.4		21.3	21.3	21.3	15.1	15.1	
Effective Green, g (s)	17.2	38.5	38.5	25.1	46.4		21.3	21.3	21.3	15.1	15.1	
Actuated g/C Ratio	0.15	0.33	0.33	0.21	0.39		0.18	0.18	0.18	0.13	0.13	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	258	1154	516	376	1986		290	600	285	226	437	
v/s Ratio Prot	0.09	0.21		c0.32	c0.39		c0.09	0.09		0.09	c0.25	
v/s Ratio Perm			0.10						0.02			
v/c Ratio	0.61	0.64	0.32	1.50	0.99		0.51	0.51	0.09	0.71	1.96	
Uniform Delay, d1	47.3	33.9	29.9	46.5	35.5		43.6	43.6	40.2	49.3	51.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.3	1.2	0.4	239.7	16.8		1.5	0.7	0.1	9.7	442.5	
Delay (s)	51.5	35.1	30.2	286.2	52.3		45.2	44.4	40.4	59.0	493.9	
Level of Service	D	D	C	F	D		D	D	D	E	F	
Approach Delay (s)		35.2			104.6			43.7			426.8	
Approach LOS		D			F			D			F	

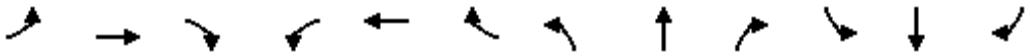
Intersection Summary			
HCM 2000 Control Delay	140.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	933	237	958	1244	33	512	196	89	44	694	113
Future Volume (vph)	53	933	237	958	1244	33	512	196	89	44	694	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3432		1770	3539	1583	1770	1775		1770	1824	
Flt Permitted	0.15	1.00		0.17	1.00	1.00	0.19	1.00		0.38	1.00	
Satd. Flow (perm)	278	3432		315	3539	1583	347	1775		715	1824	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	982	249	1008	1309	35	539	206	94	46	731	119
RTOR Reduction (vph)	0	10	0	0	0	13	0	20	0	0	7	0
Lane Group Flow (vph)	56	1221	0	1008	1309	22	539	280	0	46	843	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	2123		194	2189	979	93	477		192	490	
v/s Ratio Prot		0.36			0.37			0.16			0.46	
v/s Ratio Perm	0.20			c3.20		0.01	c1.56			0.06		
v/c Ratio	0.33	0.57		5.20	0.60	0.02	5.80	0.59		0.24	1.72	
Uniform Delay, d1	7.3	9.0		15.2	9.2	5.9	29.2	25.4		22.9	29.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		1899.6	0.4	0.0	2181.2	5.2		2.9	332.4	
Delay (s)	8.4	9.4		1914.8	9.7	5.9	2210.5	30.6		25.8	361.7	
Level of Service	A	A		F	A	A	F	C		C	F	
Approach Delay (s)		9.4			826.1			1431.0			344.5	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	644.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	5.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	173.2%	ICU Level of Service	H
Analysis Period (min)	15		

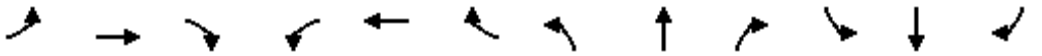
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱				↰↰		↱
Traffic Volume (vph)	0	1011	218	0	2111	584	0	0	0	306	0	397
Future Volume (vph)	0	1011	218	0	2111	584	0	0	0	306	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1053	237	0	2199	608	0	0	0	319	0	414
RTOR Reduction (vph)	0	0	85	0	0	144	0	0	0	0	0	15
Lane Group Flow (vph)	0	1053	152	0	2199	464	0	0	0	319	0	399
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		6			2					8		
Permitted Phases			6			2						8
Actuated Green, G (s)		63.2	63.2		63.2	63.2				26.0		26.0
Effective Green, g (s)		63.2	63.2		63.2	63.2				26.0		26.0
Actuated g/C Ratio		0.64	0.64		0.64	0.64				0.26		0.26
Clearance Time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3269	1017		3269	1017				908		418
v/s Ratio Prot		0.21			c0.43					0.09		
v/s Ratio Perm			0.10			0.29						c0.25
v/c Ratio		0.32	0.15		0.67	0.46				0.35		0.95
Uniform Delay, d1		7.9	6.9		11.0	8.9				29.3		35.6
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.3	0.3		0.6	0.3				1.1		33.8
Delay (s)		8.2	7.2		11.6	9.2				30.4		69.3
Level of Service		A	A		B	A				C		E
Approach Delay (s)		8.0			11.1			0.0			52.4	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

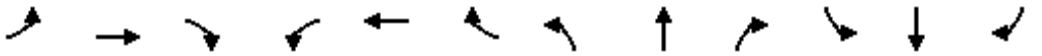
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1011	218	584	2111	0	0	0	0	306	0	397
Future Volume (vph)	0	1011	218	584	2111	0	0	0	0	306	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Lane Util. Factor		0.95	1.00	1.00	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	1770	5085					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	1770	5085					3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1053	237	635	2199	0	0	0	0	319	0	414
RTOR Reduction (vph)	0	0	170	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	1053	67	635	2199	0	0	0	0	319	0	362
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		6		5	2					8		
Permitted Phases			6									8
Actuated Green, G (s)		26.6	26.6	34.8	65.9					25.0		25.0
Effective Green, g (s)		26.6	26.6	34.8	65.9					25.0		25.0
Actuated g/C Ratio		0.27	0.27	0.35	0.66					0.25		0.25
Clearance Time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		941	421	615	3351					858		395
v/s Ratio Prot		c0.30		c0.36	0.43					0.09		
v/s Ratio Perm			0.04									c0.23
v/c Ratio		1.12	0.16	1.03	0.66					0.37		0.92
Uniform Delay, d1		36.7	28.1	32.6	10.2					31.0		36.5
Progression Factor		1.00	1.00	1.00	1.00					1.00		1.00
Incremental Delay, d2		67.8	0.8	44.9	0.5					1.2		28.3
Delay (s)		104.5	29.0	77.5	10.7					32.2		64.7
Level of Service		F	C	E	B					C		E
Approach Delay (s)		90.6			25.7			0.0			50.6	
Approach LOS		F			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	630	986	0	0	1059	362	314	452	324	668	0	1503
Future Volume (vph)	630	986	0	0	1059	362	314	452	324	668	0	1503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	643	1006	0	0	1081	369	320	491	331	682	0	1534
RTOR Reduction (vph)	0	0	0	0	0	263	0	0	73	0	0	234
Lane Group Flow (vph)	643	1006	0	0	1081	106	288	523	258	682	0	1300
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	39.3	39.3	39.3	24.7		41.3
Effective Green, g (s)	11.7	40.6			24.2	24.2	39.3	39.3	39.3	24.7		41.3
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.33	0.33	0.33	0.21		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	550	577	518	364		959
v/s Ratio Prot	c0.19	0.28			c0.21		0.17	c0.30		c0.39		0.47
v/s Ratio Perm						0.07			0.16			
v/c Ratio	1.93	0.84			1.05	0.33	0.52	0.91	0.50	1.87		1.36
Uniform Delay, d1	54.1	36.7			47.9	41.0	32.8	38.6	32.4	47.6		39.4
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	427.2	7.2			43.7	2.8	0.9	17.8	0.8	403.5		166.8
Delay (s)	481.4	43.9			91.6	43.8	33.7	56.4	33.2	451.1		206.2
Level of Service	F	D			F	D	C	E	C	F		F
Approach Delay (s)		214.5			79.4			43.9			281.5	
Approach LOS		F			E			D			F	

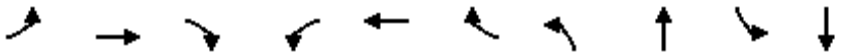
Intersection Summary			
HCM 2000 Control Delay	177.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	23	12	0	40	26	0
Future Volume (Veh/h)	23	12	0	40	26	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	13	0	43	28	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			38		74	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			38		74	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1572		929	1043

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	38	43	28
Volume Left	0	0	28
Volume Right	13	0	0
cSH	1700	1700	929
Volume to Capacity	0.02	0.03	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	438	313	471	290	157	62	396	2151	89	2915
v/c Ratio	0.79	0.54	0.91	0.68	0.35	0.23	1.16	1.11	0.26	1.50
Control Delay	63.7	53.4	42.1	63.3	54.0	9.1	146.6	95.5	49.1	258.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.7	53.4	42.1	63.3	54.0	9.1	146.6	95.5	49.1	258.4
Queue Length 50th (ft)	189	128	151	125	64	0	~414	~795	67	~1306
Queue Length 95th (ft)	249	182	#347	172	101	29	#636	#922	122	#1433
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	661	682	550	661	682	367	341	1936	341	1944
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.46	0.86	0.44	0.23	0.17	1.16	1.11	0.26	1.50

Intersection Summary

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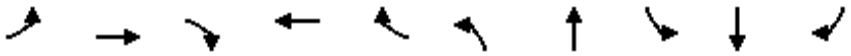

Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	480	12	396	55	10	371	1791	21	2587	362
v/c Ratio	0.85	0.04	0.67	0.47	0.06	0.75	0.55	0.23	0.99	0.40
Control Delay	72.6	49.9	10.9	76.6	0.6	67.6	17.1	70.0	50.1	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	49.9	10.9	76.6	0.6	67.6	17.1	70.0	50.1	12.6
Queue Length 50th (ft)	223	9	0	50	0	172	371	19	~939	96
Queue Length 95th (ft)	#301	29	100	96	0	219	446	48	#1104	193
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	596	141	201	701	3230	361	2612	902
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.04	0.66	0.39	0.05	0.53	0.55	0.06	0.99	0.40

Intersection Summary

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Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	161	48	33	70	2209	19	3155
v/c Ratio	1.10	0.76	0.20	0.89	0.76	0.22	1.14
Control Delay	145.7	119.6	10.2	135.6	8.6	66.7	86.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	145.7	119.6	10.2	135.6	8.6	66.7	86.5
Queue Length 50th (ft)	~122	41	0	61	281	16	~1678
Queue Length 95th (ft)	#272	#115	21	#158	615	43	#1790
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	146	63	164	79	2910	93	2762
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.10	0.76	0.20	0.89	0.76	0.20	1.14

Intersection Summary

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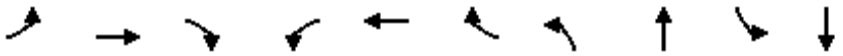

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	434	443	264	26	248	293	684	1527	118	3079
v/c Ratio	1.36	0.58	0.55	0.35	0.65	0.64	1.27	0.52	0.66	1.19
Control Delay	228.9	28.3	10.2	79.6	68.4	35.7	182.1	19.4	78.6	122.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	228.9	28.3	10.2	79.6	68.4	35.7	182.1	19.4	78.6	122.4
Queue Length 50th (ft)	~267	100	0	24	116	152	~404	297	105	~1228
Queue Length 95th (ft)	#392	162	91	58	163	246	#550	385	174	#1366
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	318	882	532	75	631	499	539	2933	227	2577
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.36	0.50	0.50	0.35	0.39	0.59	1.27	0.52	0.52	1.19

Intersection Summary

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Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	201	355	119	478	1519	27	3005
v/c Ratio	0.73	0.57	0.47	0.69	0.52	0.10	1.54
Control Delay	44.3	7.2	28.3	32.7	11.9	27.8	269.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.3	7.2	28.3	32.7	11.9	27.8	269.7
Queue Length 50th (ft)	86	0	40	105	110	11	~757
Queue Length 95th (ft)	#178	63	89	146	246	32	#887
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	292	634	269	826	2939	378	1949
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.56	0.44	0.58	0.52	0.07	1.54

Intersection Summary

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	54	1063	147	371	1321	81	205	215	262	221	365
v/c Ratio	0.38	0.82	0.22	0.93	1.33	0.09	1.50	0.42	0.42	0.86	0.71
Control Delay	55.8	36.6	4.4	72.7	180.6	6.1	288.1	36.2	6.3	68.7	44.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	36.6	4.4	72.7	180.6	6.1	288.1	36.2	6.3	68.7	44.6
Queue Length 50th (ft)	37	348	0	263	~1238	9	~207	128	0	152	235
Queue Length 95th (ft)	78	431	40	#456	#1551	34	#364	205	63	#305	#357
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	410	1478	746	410	994	870	137	518	629	258	511
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.72	0.20	0.90	1.33	0.09	1.50	0.42	0.42	0.86	0.71

Intersection Summary

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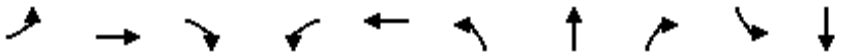

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	154	716	491	569	1977	157	321	141	158	885
v/c Ratio	0.61	0.63	0.58	1.51	1.00	0.53	0.53	0.35	0.70	1.95
Control Delay	58.5	36.7	5.6	276.5	55.6	51.5	47.4	9.4	67.5	460.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	58.5	36.7	5.6	276.5	55.6	51.6	47.4	9.4	67.5	460.8
Queue Length 50th (ft)	108	236	0	~565	510	115	118	0	111	~515
Queue Length 95th (ft)	194	324	76	#945	#768	210	185	57	#248	#772
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	377	1689	1012	377	2415	453	936	546	226	455
Starvation Cap Reductn	0	0	0	0	0	16	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.42	0.49	1.51	0.82	0.36	0.34	0.26	0.70	1.95

Intersection Summary

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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	1184	1001	1353	35	699	348	46	859
v/c Ratio	0.18	0.56	4.79	0.62	0.04	7.60	0.70	0.30	1.73
Control Delay	10.0	9.9	1726.7	11.0	2.3	2998.7	32.9	29.6	360.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	9.9	1726.7	11.0	2.3	2998.7	32.9	29.6	360.4
Queue Length 50th (ft)	6	157	~861	196	0	~664	143	18	~650
Queue Length 95th (ft)	19	209	#1093	256	10	#873	#238	49	#873
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	159	2129	209	2189	992	92	497	154	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.56	4.79	0.62	0.04	7.60	0.70	0.30	1.73

Intersection Summary

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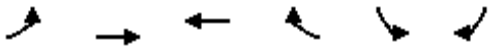

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	235	1049	1866	622	319	409
v/c Ratio	0.72	0.51	1.49	0.93	0.56	0.52
Control Delay	48.7	12.9	250.6	44.8	31.8	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	12.9	250.6	44.8	31.8	5.2
Queue Length 50th (ft)	136	185	~836	278	160	0
Queue Length 95th (ft)	203	236	#1056	#560	252	65
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	458	2136	1255	671	568	786
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.49	1.49	0.93	0.56	0.52

Intersection Summary

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Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	611	978	1047	379	509	947	347	724	1504
v/c Ratio	1.83	0.82	1.02	0.63	0.89	1.58	0.57	2.13	1.49
Control Delay	415.8	43.0	80.9	11.5	56.7	296.9	25.8	543.6	256.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	415.8	43.0	80.9	11.5	56.7	296.9	25.8	543.6	256.3
Queue Length 50th (ft)	~368	362	~315	19	390	~1096	149	~892	~880
Queue Length 95th (ft)	#485	447	#408	116	#601	#1360	248	#1126	#1033
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	597	572	601	611	340	1007
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.83	0.82	1.02	0.63	0.89	1.58	0.57	2.13	1.49

Intersection Summary

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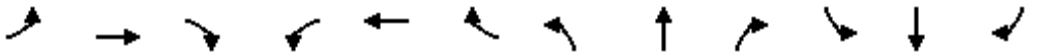
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	481	328	547	200	232	79	434	2290	329	169	1850	302
Future Volume (vph)	481	328	547	200	232	79	434	2290	329	169	1850	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4989		1770	4978	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4989		1770	4978	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	540	369	615	225	261	89	488	2573	370	190	2079	339
RTOR Reduction (vph)	0	0	260	0	0	78	0	12	0	0	15	0
Lane Group Flow (vph)	540	369	355	225	261	11	488	2931	0	190	2403	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	23.9	25.9	25.9	13.9	15.9	15.9	25.0	50.0		25.0	50.0	
Effective Green, g (s)	23.9	25.9	25.9	13.9	15.9	15.9	25.0	50.0		25.0	50.0	
Actuated g/C Ratio	0.18	0.20	0.20	0.11	0.12	0.12	0.19	0.38		0.19	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	622	695	311	362	426	190	335	1892		335	1888	
v/s Ratio Prot	c0.16	0.10		0.07	0.07		c0.28	c0.59		0.11	0.48	
v/s Ratio Perm			c0.22			0.01						
v/c Ratio	0.87	0.53	1.14	0.62	0.61	0.06	1.46	1.55		0.57	1.27	
Uniform Delay, d1	52.4	47.5	53.0	56.4	55.0	51.3	53.4	40.9		48.5	40.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.3	0.8	94.6	3.3	2.6	0.1	221.4	249.7		6.8	127.1	
Delay (s)	64.7	48.3	147.5	59.7	57.6	51.4	274.8	290.6		55.3	168.0	
Level of Service	E	D	F	E	E	D	F	F		E	F	
Approach Delay (s)		94.1			57.5			288.3			159.8	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	194.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	131.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	528	18	439	14	31	23	582	2336	2	72	1841	523
Future Volume (vph)	528	18	439	14	31	23	582	2336	2	72	1841	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1834	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1834	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	533	18	443	14	31	23	588	2360	2	73	1860	528
RTOR Reduction (vph)	0	0	343	0	0	22	0	0	0	0	0	204
Lane Group Flow (vph)	533	18	100	0	45	1	588	2362	0	73	1860	324
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	24.0	24.0	24.0		7.5	7.5	27.8	82.7		9.8	64.7	64.7
Effective Green, g (s)	24.0	24.0	24.0		7.5	7.5	27.8	82.7		9.8	64.7	64.7
Actuated g/C Ratio	0.17	0.17	0.17		0.05	0.05	0.20	0.58		0.07	0.46	0.46
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	580	314	267		96	83	672	2961		122	2316	721
v/s Ratio Prot	c0.16	0.01			c0.02		c0.17	c0.46		0.04	0.37	
v/s Ratio Perm			0.06			0.00						0.20
v/c Ratio	0.92	0.06	0.37		0.47	0.01	0.88	0.80		0.60	0.80	0.45
Uniform Delay, d1	58.0	49.5	52.3		65.3	63.7	55.4	23.1		64.2	33.2	26.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.6	0.1	0.9		3.6	0.1	12.2	2.3		7.7	3.1	2.0
Delay (s)	77.6	49.6	53.2		68.9	63.8	67.6	25.5		71.9	36.2	28.5
Level of Service	E	D	D		E	E	E	C		E	D	C
Approach Delay (s)		66.2			67.2			33.9			35.6	
Approach LOS		E			E			C			D	

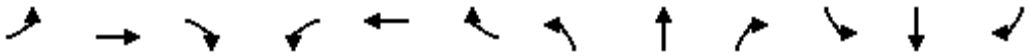
Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	2	76	33	2	26	115	2956	47	33	2219	96
Future Volume (vph)	29	2	76	33	2	26	115	2956	47	33	2219	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.90			1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1661			1779	1583	1770	3531		1770	3517	
Flt Permitted		0.90			0.51	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1509			941	1583	1770	3531		1770	3517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	30	2	79	34	2	27	120	3079	49	34	2311	100
RTOR Reduction (vph)	0	67	0	0	0	25	0	1	0	0	2	0
Lane Group Flow (vph)	0	44	0	0	36	2	120	3127	0	34	2409	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		7.7			7.7	7.7	11.5	109.5		3.6	101.6	
Effective Green, g (s)		7.7			7.7	7.7	11.5	109.5		3.6	101.6	
Actuated g/C Ratio		0.06			0.06	0.06	0.09	0.82		0.03	0.76	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		86			54	91	152	2889		47	2670	
v/s Ratio Prot							c0.07	c0.89		0.02	0.68	
v/s Ratio Perm		0.03			c0.04	0.00						
v/c Ratio		0.51			0.67	0.02	0.79	1.08		0.72	0.90	
Uniform Delay, d1		61.2			61.8	59.5	60.0	12.2		64.6	12.3	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1			26.9	0.1	23.2	44.0		42.4	5.5	
Delay (s)		66.3			88.7	59.6	83.2	56.2		107.0	17.8	
Level of Service		E			F	E	F	E		F	B	
Approach Delay (s)		66.3			76.2			57.2			19.1	
Approach LOS		E			E			E			B	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	133.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

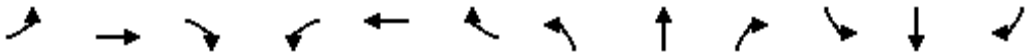
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	710	191	807	14	146	145	623	2264	22	152	1714	461
Future Volume (vph)	710	191	807	14	146	145	623	2264	22	152	1714	461
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.90	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3045	1441	1770	3539	1583	3433	5078		1770	4924	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3045	1441	1770	3539	1583	3433	5078		1770	4924	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	732	197	832	14	151	149	642	2334	23	157	1767	475
RTOR Reduction (vph)	0	251	251	0	0	88	0	1	0	0	31	0
Lane Group Flow (vph)	732	362	165	14	151	61	642	2356	0	157	2211	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	26.0	38.2	38.2	2.0	14.2	27.2	24.0	69.0		13.0	58.0	
Effective Green, g (s)	26.0	38.2	38.2	2.0	14.2	27.2	24.0	69.0		13.0	58.0	
Actuated g/C Ratio	0.19	0.27	0.27	0.01	0.10	0.20	0.17	0.50		0.09	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	641	835	395	25	361	354	591	2517		165	2051	
v/s Ratio Prot	c0.21	c0.12		0.01	0.04	0.02	c0.19	0.46		0.09	c0.45	
v/s Ratio Perm			0.11			0.02						
v/c Ratio	1.14	0.43	0.42	0.56	0.42	0.17	1.09	0.94		0.95	1.08	
Uniform Delay, d1	56.6	41.6	41.4	68.2	58.6	46.6	57.6	33.0		62.8	40.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	81.6	0.4	0.7	25.6	0.8	0.2	62.6	8.2		55.5	44.7	
Delay (s)	138.2	42.0	42.1	93.8	59.4	46.9	120.2	41.2		118.3	85.3	
Level of Service	F	D	D	F	E	D	F	D		F	F	
Approach Delay (s)		82.0			55.0			58.1			87.4	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	73.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	139.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

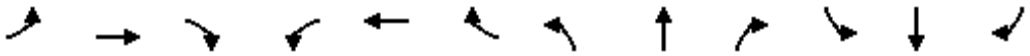
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	20	434	51	12	18	414	2817	47	30	1744	156
Future Volume (vph)	231	20	434	51	12	18	414	2817	47	30	1744	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1752		3433	5073		1770	5023	
Flt Permitted		0.72	1.00		0.57		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1349	1583		1024		3433	5073		1770	5023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	243	21	457	54	13	19	436	2965	49	32	1836	164
RTOR Reduction (vph)	0	0	333	0	14	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	264	124	0	72	0	436	3012	0	32	1987	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		14.6	40.8		4.8	29.0	
Effective Green, g (s)		16.4	16.4		16.4		14.6	40.8		4.8	29.0	
Actuated g/C Ratio		0.22	0.22		0.22		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		295	347		224		670	2767		113	1947	
v/s Ratio Prot							c0.13	c0.59		0.02	0.40	
v/s Ratio Perm		c0.20	0.08		0.07							
v/c Ratio		0.89	0.36		0.32		0.65	1.09		0.28	1.02	
Uniform Delay, d1		28.4	24.7		24.5		27.7	17.0		33.4	22.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.2	0.6		0.8		2.3	46.7		1.4	25.8	
Delay (s)		55.5	25.4		25.4		30.0	63.7		34.7	48.7	
Level of Service		E	C		C		C	E		C	D	
Approach Delay (s)		36.4			25.4			59.4			48.4	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

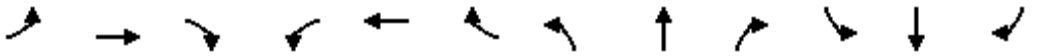
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	8	11	97	5	98	21	664	62	68	607	11
Future Volume (vph)	11	8	11	97	5	98	21	664	62	68	607	11
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
Hourly flow rate (vph)	12	9	12	107	5	108	23	730	68	75	667	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	220	821	754
Volume Left (vph)	12	107	23	75
Volume Right (vph)	12	108	68	12
Hadj (s)	-0.11	-0.16	-0.01	0.04
Departure Headway (s)	8.0	7.0	5.8	5.9
Degree Utilization, x	0.07	0.43	1.33	1.24
Capacity (veh/h)	427	501	629	619
Control Delay (s)	11.6	15.2	179.2	139.9
Approach Delay (s)	11.6	15.2	179.2	139.9
Approach LOS	B	C	F	F

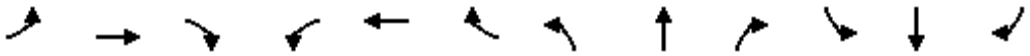
Intersection Summary				
Delay	140.2			
Level of Service	F			
Intersection Capacity Utilization	88.6%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	1281	148	432	1101	69	189	492	442	130	226	56
Future Volume (vph)	140	1281	148	432	1101	69	189	492	442	130	226	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1807	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.36	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	670	1863	1583	248	1807	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	144	1321	153	445	1135	71	195	507	456	134	233	58
RTOR Reduction (vph)	0	0	77	0	0	28	0	0	292	0	8	0
Lane Group Flow (vph)	144	1321	76	445	1135	43	195	507	164	134	283	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	14.5	45.0	45.0	25.0	55.5	55.5	30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	14.5	45.0	45.0	25.0	55.5	55.5	30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.13	0.40	0.40	0.22	0.49	0.49	0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	225	1400	626	389	909	772	176	491	417	65	476	
v/s Ratio Prot	0.08	0.37		c0.25	c0.61			0.27			0.16	
v/s Ratio Perm			0.05			0.03	0.29		0.10	c0.54		
v/c Ratio	0.64	0.94	0.12	1.14	1.25	0.06	1.11	1.03	0.39	2.06	0.59	
Uniform Delay, d1	47.1	33.1	21.8	44.4	29.1	15.3	41.9	41.9	34.4	41.9	36.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.1	12.9	0.1	91.0	121.1	0.1	99.7	49.3	0.6	526.5	5.4	
Delay (s)	53.2	46.0	21.9	135.3	150.2	15.4	141.6	91.1	35.0	568.3	41.9	
Level of Service	D	D	C	F	F	B	F	F	C	F	D	
Approach Delay (s)		44.4			140.4			77.5			207.9	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	99.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	113.7	Sum of lost time (s)	13.7
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		

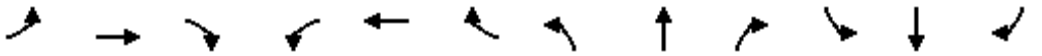
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1695	260	180	1018	158	586	848	465	139	235	152
Future Volume (vph)	404	1695	260	180	1018	158	586	848	465	139	235	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4983		1610	3369	1583	1770	3331	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4983		1610	3369	1583	1770	3331	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	434	1823	280	194	1095	170	630	912	500	149	253	163
RTOR Reduction (vph)	0	0	77	0	15	0	0	0	233	0	71	0
Lane Group Flow (vph)	434	1823	203	194	1250	0	498	1044	267	149	345	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.0	56.1	56.1	20.1	51.2		33.0	33.0	33.0	15.0	15.0	
Effective Green, g (s)	25.0	56.1	56.1	20.1	51.2		33.0	33.0	33.0	15.0	15.0	
Actuated g/C Ratio	0.18	0.39	0.39	0.14	0.36		0.23	0.23	0.23	0.11	0.11	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	311	1396	624	250	1794		373	781	367	186	351	
v/s Ratio Prot	c0.25	c0.52		0.11	0.25		0.31	c0.31		0.08	c0.10	
v/s Ratio Perm			0.13						0.17			
v/c Ratio	1.40	1.31	0.33	0.78	0.70		1.34	1.34	0.73	0.80	0.98	
Uniform Delay, d1	58.6	43.0	29.9	58.9	38.9		54.6	54.6	50.5	62.1	63.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	196.5	142.9	0.3	14.0	1.2		168.1	160.2	7.1	21.4	43.4	
Delay (s)	255.1	186.0	30.2	72.9	40.1		222.7	214.8	57.5	83.5	106.9	
Level of Service	F	F	C	E	D		F	F	E	F	F	
Approach Delay (s)		180.6			44.4			178.2			100.7	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	142.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	142.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		

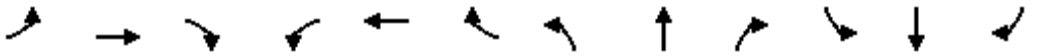
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	1508	240	763	1010	58	874	802	43	33	362	74
Future Volume (vph)	119	1508	240	763	1010	58	874	802	43	33	362	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3466		1770	3539	1583	1770	1849		1770	1815	
Flt Permitted	0.22	1.00		0.08	1.00	1.00	0.19	1.00		0.19	1.00	
Satd. Flow (perm)	408	3466		151	3539	1583	347	1849		347	1815	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	1587	253	803	1063	61	920	844	45	35	381	78
RTOR Reduction (vph)	0	16	0	0	0	8	0	2	0	0	10	0
Lane Group Flow (vph)	125	1824	0	803	1063	53	920	887	0	35	449	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	2144		93	2189	979	93	496		93	487	
v/s Ratio Prot		0.53			0.30			0.48			0.25	
v/s Ratio Perm	0.31			c5.33		0.03	c2.65			0.10		
v/c Ratio	0.50	0.85		8.63	0.49	0.05	9.89	1.79		0.38	0.92	
Uniform Delay, d1	8.4	12.3		15.2	8.3	6.0	29.2	29.2		23.8	28.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	3.5		3457.2	0.2	0.0	4023.0	362.6		11.2	25.5	
Delay (s)	9.9	15.7		3472.5	8.5	6.0	4052.3	391.9		35.0	54.0	
Level of Service	A	B		F	A	A	F	F		D	D	
Approach Delay (s)		15.4			1451.9			2253.4			52.6	
Approach LOS		B			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	1118.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	8.98		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	178.6%	ICU Level of Service	H
Analysis Period (min)	15		

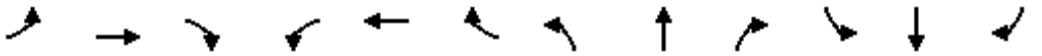
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱				↰↰		↱
Traffic Volume (vph)	0	1630	499	0	1795	296	0	0	0	454	0	379
Future Volume (vph)	0	1630	499	0	1795	296	0	0	0	454	0	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1698	542	0	1870	308	0	0	0	473	0	395
RTOR Reduction (vph)	0	0	201	0	0	86	0	0	0	0	0	15
Lane Group Flow (vph)	0	1698	341	0	1870	222	0	0	0	473	0	380
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		6			2					8		
Permitted Phases			6			2						8
Actuated Green, G (s)		61.9	61.9		61.9	61.9				27.3		27.3
Effective Green, g (s)		61.9	61.9		61.9	61.9				27.3		27.3
Actuated g/C Ratio		0.63	0.63		0.63	0.63				0.28		0.28
Clearance Time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3202	996		3202	996				953		439
v/s Ratio Prot		0.33			c0.37					0.14		
v/s Ratio Perm			0.22			0.14						c0.24
v/c Ratio		0.53	0.34		0.58	0.22				0.50		0.87
Uniform Delay, d1		10.1	8.6		10.7	7.8				29.7		33.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.6	0.9		0.3	0.1				1.8		19.8
Delay (s)		10.8	9.5		10.9	8.0				31.6		53.6
Level of Service		B	A		B	A				C		D
Approach Delay (s)		10.5			10.5			0.0			41.6	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

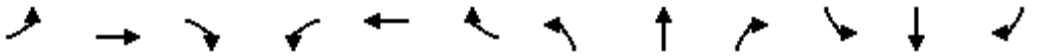
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1630	499	296	1795	0	0	0	0	454	0	379
Future Volume (vph)	0	1630	499	296	1795	0	0	0	0	454	0	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Lane Util. Factor		0.95	1.00	1.00	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	1770	5085					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	1770	5085					3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1698	542	322	1870	0	0	0	0	473	0	395
RTOR Reduction (vph)	0	0	219	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	1698	323	322	1870	0	0	0	0	473	0	348
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		6		5	2					8		
Permitted Phases			6									8
Actuated Green, G (s)		40.5	40.5	22.3	67.3					29.2		29.2
Effective Green, g (s)		40.5	40.5	22.3	67.3					29.2		29.2
Actuated g/C Ratio		0.38	0.38	0.21	0.64					0.28		0.28
Clearance Time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1357	607	373	3240					949		437
v/s Ratio Prot		c0.48		c0.18	0.37					0.14		
v/s Ratio Perm			0.20									c0.22
v/c Ratio		1.25	0.53	0.86	0.58					0.50		0.80
Uniform Delay, d1		32.5	25.2	40.2	11.0					32.1		35.4
Progression Factor		1.00	1.00	1.00	1.00					1.00		1.00
Incremental Delay, d2		119.3	3.3	18.2	0.3					1.9		14.0
Delay (s)		151.9	28.5	58.4	11.2					33.9		49.4
Level of Service		F	C	E	B					C		D
Approach Delay (s)		122.0			18.2			0.0			41.0	
Approach LOS		F			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	65.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1216	925	0	0	1147	803	129	557	119	622	0	1136
Future Volume (vph)	1216	925	0	0	1147	803	129	557	119	622	0	1136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1241	944	0	0	1170	819	132	605	121	635	0	1159
RTOR Reduction (vph)	0	0	0	0	0	231	0	0	64	0	0	547
Lane Group Flow (vph)	1241	944	0	0	1170	588	119	618	57	635	0	612
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	47.7	47.7	47.7	17.7		43.9
Effective Green, g (s)	21.3	49.2			23.2	23.2	47.7	47.7	47.7	17.7		43.9
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.37	0.37	0.37	0.14		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	616	648	580	240		941
v/s Ratio Prot	c0.36	0.27			0.23		0.07	c0.35		c0.36		0.22
v/s Ratio Perm						c0.37			0.04			
v/c Ratio	2.21	0.71			1.29	2.09	0.19	0.95	0.10	2.65		0.65
Uniform Delay, d1	54.4	34.2			53.4	53.4	28.0	40.1	27.0	56.1		36.5
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	549.5	3.1			138.8	500.5	0.2	24.3	0.1	752.5		1.6
Delay (s)	603.8	37.4			192.2	553.9	28.2	64.4	27.1	808.6		38.2
Level of Service	F	D			F	F	C	E	C	F		D
Approach Delay (s)		359.1			341.1			54.1			310.9	
Approach LOS		F			F			D			F	

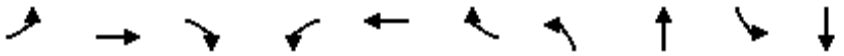
Intersection Summary			
HCM 2000 Control Delay	302.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	136.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	71	22	0	48	20	0
Future Volume (Veh/h)	71	22	0	48	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	24	0	52	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			101		141	89
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			101		141	89
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1491		852	969

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	101	52	22
Volume Left	0	0	22
Volume Right	24	0	0
cSH	1700	1700	852
Volume to Capacity	0.06	0.03	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

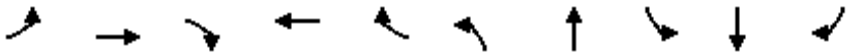


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	571	357	667	207	264	79	548	2885	166	2405
v/c Ratio	0.89	0.50	1.14	0.60	0.64	0.31	1.64	1.51	0.50	1.27
Control Delay	70.4	49.7	106.2	64.6	63.1	14.0	334.0	265.4	54.5	159.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.4	49.7	106.2	64.6	63.1	14.0	334.0	265.4	54.5	159.2
Queue Length 50th (ft)	247	144	~425	89	115	0	~677	~1266	129	~948
Queue Length 95th (ft)	#358	198	#667	130	161	46	#930	#1402	209	#1083
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	650	716	585	650	670	363	335	1905	335	1899
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	0.50	1.14	0.32	0.39	0.22	1.64	1.51	0.50	1.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	496	21	410	44	24	542	2405	74	1897	492
v/c Ratio	0.87	0.07	0.68	0.40	0.14	0.84	0.79	0.53	0.79	0.53
Control Delay	74.9	50.4	10.9	73.8	1.6	68.5	26.9	75.4	35.8	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.9	50.4	10.9	73.8	1.6	68.5	26.9	75.4	35.8	10.6
Queue Length 50th (ft)	232	17	0	40	0	250	652	67	556	89
Queue Length 95th (ft)	#318	42	102	81	0	313	803	118	654	205
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	608	141	201	705	3034	361	2410	930
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.07	0.67	0.31	0.12	0.77	0.79	0.20	0.79	0.53

Intersection Summary

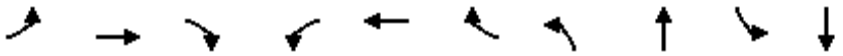
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	107	36	27	114	3124	34	2413
v/c Ratio	0.69	0.67	0.16	0.75	1.07	0.42	0.91
Control Delay	47.3	111.6	2.0	87.7	52.0	78.4	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.3	111.6	2.0	87.7	52.0	78.4	19.0
Queue Length 50th (ft)	30	31	0	97	~1623	29	755
Queue Length 95th (ft)	#113	#89	0	#188	#1735	67	912
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	158	56	173	160	2927	80	2666
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.64	0.16	0.71	1.07	0.42	0.91

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	727	608	411	14	159	149	693	2354	158	2235
v/c Ratio	1.16	0.56	0.64	0.22	0.52	0.36	1.15	0.91	0.94	1.04
Control Delay	137.4	20.5	13.7	73.4	65.9	16.7	135.4	36.9	116.8	67.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.4	20.5	13.7	73.4	65.9	16.7	135.4	36.9	116.8	67.7
Queue Length 50th (ft)	~391	104	49	12	72	29	~370	674	141	~768
Queue Length 95th (ft)	#545	182	187	38	111	91	#522	811	#297	#920
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	627	1231	703	64	646	419	602	2596	168	2150
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.16	0.49	0.58	0.22	0.25	0.36	1.15	0.91	0.94	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	283	453	85	398	3073	33	1992
v/c Ratio	0.93	0.66	0.36	0.62	1.06	0.12	1.01
Control Delay	68.2	9.0	24.6	32.1	57.0	28.1	48.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.2	9.0	24.6	32.1	57.0	28.1	48.8
Queue Length 50th (ft)	129	10	25	88	398	13	~337
Queue Length 95th (ft)	#270	90	65	123	#808	37	#502
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	306	688	240	826	2886	378	1965
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.66	0.35	0.48	1.06	0.09	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

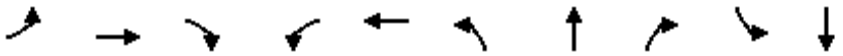
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	125	1293	152	425	1096	60	206	460	467	132	293
v/c Ratio	0.60	0.93	0.22	1.09	1.18	0.07	1.17	0.93	0.66	2.03	0.60
Control Delay	59.2	45.5	6.3	113.9	122.4	5.5	160.7	68.6	11.4	535.6	41.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	45.5	6.3	113.9	122.4	5.5	160.7	68.6	11.4	535.6	41.2
Queue Length 50th (ft)	88	467	10	~351	~963	2	~180	330	39	~151	181
Queue Length 95th (ft)	144	#612	52	#548	#1281	26	#331	#529	149	#276	274
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	390	1405	706	390	925	814	176	493	711	65	486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.92	0.22	1.09	1.18	0.07	1.17	0.93	0.66	2.03	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	406	1743	266	201	1334	512	1067	517	149	418
v/c Ratio	1.31	1.25	0.38	0.79	0.73	1.38	1.37	0.86	0.80	0.98
Control Delay	205.6	157.4	17.9	80.8	41.6	225.9	215.7	36.5	92.5	90.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.6	1.7	11.9	0.0	0.0
Total Delay	205.6	157.4	17.9	80.8	41.6	228.5	217.4	48.4	92.5	90.2
Queue Length 50th (ft)	~488	~1072	89	183	387	~695	~723	208	138	168
Queue Length 95th (ft)	#720	#1255	171	273	442	#972	#897	#426	#264	#294
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	310	1390	698	310	1971	372	779	601	186	425
Starvation Cap Reductn	0	0	0	0	0	77	179	73	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.31	1.25	0.38	0.65	0.68	1.74	1.78	0.98	0.80	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	68	1718	799	1160	61	994	891	32	441
v/c Ratio	0.31	0.80	8.59	0.53	0.06	10.80	1.79	0.35	0.89
Control Delay	12.1	14.7	3444.3	9.7	4.7	4438.7	385.4	36.0	49.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	14.7	3444.3	9.7	4.7	4438.7	385.4	36.0	49.8
Queue Length 50th (ft)	14	296	~766	154	7	~983	~687	13	205
Queue Length 95th (ft)	41	392	#984	203	21	#1215	#911	41	#375
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	217	2160	93	2189	987	92	499	92	496
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.80	8.59	0.53	0.06	10.80	1.79	0.35	0.89

Intersection Summary

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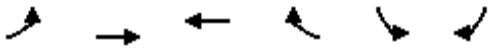
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	458	1807	1660	291	539	378
v/c Ratio	1.02	0.86	1.59	0.55	0.97	0.50
Control Delay	84.8	22.3	297.8	24.2	65.1	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.8	22.3	297.8	24.2	65.1	5.2
Queue Length 50th (ft)	~296	460	~784	104	330	0
Queue Length 95th (ft)	#497	578	#922	189	#542	64
Internal Link Dist (ft)		179	254		265	
Turn Bay Length (ft)	350			105		
Base Capacity (vph)	450	2095	1044	530	558	758
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.02	0.86	1.59	0.55	0.97	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	1259	951	1127	805	178	943	121	627	1130
v/c Ratio	2.24	0.71	1.24	1.71	0.28	1.42	0.18	2.80	0.83
Control Delay	589.5	37.9	162.5	352.0	29.8	229.5	7.8	842.9	22.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	589.5	37.9	162.5	352.0	29.8	229.5	7.8	842.9	22.3
Queue Length 50th (ft)	~882	355	~431	~835	109	~1125	11	~901	226
Queue Length 95th (ft)	#1017	434	#527	#1086	171	#1392	52	#1134	337
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	471	632	665	658	224	1357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.24	0.71	1.24	1.71	0.28	1.42	0.18	2.80	0.83

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	276	410	255	136	54	340	1645	259	80	2387	196
Future Volume (vph)	383	276	410	255	136	54	340	1645	259	80	2387	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5027	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5027	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	430	310	461	287	153	61	382	1848	291	90	2682	220
RTOR Reduction (vph)	0	0	254	0	0	53	0	14	0	0	6	0
Lane Group Flow (vph)	430	310	207	287	153	8	382	2125	0	90	2896	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	20.8	21.1	21.1	16.1	16.4	16.4	25.1	50.2		25.1	50.2	
Effective Green, g (s)	20.8	21.1	21.1	16.1	16.4	16.4	25.1	50.2		25.1	50.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.13	0.13	0.19	0.39		0.19	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	551	576	257	426	448	200	343	1931		343	1948	
v/s Ratio Prot	c0.13	0.09		0.08	0.04		c0.22	0.43		0.05	c0.58	
v/s Ratio Perm			c0.13			0.00						
v/c Ratio	0.78	0.54	0.80	0.67	0.34	0.04	1.11	1.10		0.26	1.49	
Uniform Delay, d1	52.2	49.7	52.2	54.2	51.6	49.6	52.2	39.6		44.3	39.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	1.0	16.4	4.2	0.5	0.1	82.9	53.8		1.9	221.8	
Delay (s)	59.2	50.7	68.6	58.4	52.1	49.7	135.1	93.4		46.2	261.4	
Level of Service	E	D	E	E	D	D	F	F		D	F	
Approach Delay (s)		60.6			55.4			99.7			254.9	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	154.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	129.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	484	3	392	24	16	0	365	1739	5	15	2535	371
Future Volume (vph)	484	3	392	24	16	0	365	1739	5	15	2535	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00		0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1808		3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.97		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1808		3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	489	3	396	24	16	0	369	1757	5	15	2561	375
RTOR Reduction (vph)	0	0	331	0	0	0	0	0	0	0	0	94
Lane Group Flow (vph)	489	3	65	0	40	0	369	1762	0	15	2561	281
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	23.4	23.4	23.4		7.3		20.5	90.1		3.2	72.8	72.8
Effective Green, g (s)	23.4	23.4	23.4		7.3		20.5	90.1		3.2	72.8	72.8
Actuated g/C Ratio	0.16	0.16	0.16		0.05		0.14	0.63		0.02	0.51	0.51
Clearance Time (s)	5.0	5.0	5.0		4.0		4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	565	307	260		92		495	3225		39	2606	811
v/s Ratio Prot	c0.14	0.00			c0.02		c0.11	0.35		0.01	c0.50	
v/s Ratio Perm			0.04									0.18
v/c Ratio	0.87	0.01	0.25		0.43		0.75	0.55		0.38	0.98	0.35
Uniform Delay, d1	57.8	49.6	51.7		65.3		58.2	14.5		68.4	34.0	20.5
Progression Factor	1.00	1.00	1.00		1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.1	0.0	0.5		3.3		6.0	0.7		6.2	14.0	1.2
Delay (s)	70.8	49.6	52.2		68.6		64.3	15.2		74.6	48.0	21.7
Level of Service	E	D	D		E		E	B		E	D	C
Approach Delay (s)		62.4			68.6			23.7			44.8	
Approach LOS		E			E			C			D	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	91.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	0	88	0	0	0	67	2100	0	0	2979	40
Future Volume (vph)	62	0	88	0	0	0	67	2100	0	0	2979	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.92					1.00	1.00			1.00	
Flt Protected		0.98					0.95	1.00			1.00	
Satd. Flow (prot)		1681					1770	3539			3532	
Flt Permitted		0.98					0.95	1.00			1.00	
Satd. Flow (perm)		1681					1770	3539			3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	0	92	0	0	0	70	2188	0	0	3103	42
RTOR Reduction (vph)	0	47	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	110	0	0	0	0	70	2188	0	0	3144	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		8.0					6.0	113.0			103.0	
Effective Green, g (s)		8.0					6.0	113.0			103.0	
Actuated g/C Ratio		0.06					0.05	0.87			0.79	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		103					81	3076			2798	
v/s Ratio Prot							0.04	c0.62			c0.89	
v/s Ratio Perm		0.07										
v/c Ratio		1.07					0.86	0.71			1.12	
Uniform Delay, d1		61.0					61.6	2.9			13.5	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		108.4					56.9	1.4			61.0	
Delay (s)		169.4					118.4	4.3			74.5	
Level of Service		F					F	A			E	
Approach Delay (s)		169.4			0.0			7.9			74.5	
Approach LOS		F			A			A			E	

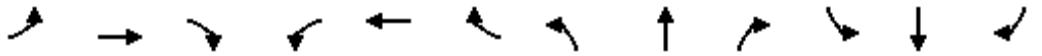
Intersection Summary			
HCM 2000 Control Delay	50.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	402	167	496	25	232	286	639	1467	11	113	2083	849
Future Volume (vph)	402	167	496	25	232	286	639	1467	11	113	2083	849
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3086	1441	1770	3539	1583	3433	5080		1770	4864	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3086	1441	1770	3539	1583	3433	5080		1770	4864	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	414	172	511	26	239	295	659	1512	11	116	2147	875
RTOR Reduction (vph)	0	188	209	0	0	86	0	0	0	0	46	0
Lane Group Flow (vph)	414	240	46	26	239	209	659	1523	0	116	2976	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	13.0	25.8	25.8	3.6	16.4	30.4	22.1	81.1		14.0	73.0	
Effective Green, g (s)	13.0	25.8	25.8	3.6	16.4	30.4	22.1	81.1		14.0	73.0	
Actuated g/C Ratio	0.09	0.18	0.18	0.03	0.12	0.21	0.16	0.57		0.10	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	315	562	262	45	410	384	536	2911		175	2509	
v/s Ratio Prot	c0.12	0.08		0.01	0.07	c0.05	c0.19	0.30		0.07	c0.61	
v/s Ratio Perm			0.03			0.08						
v/c Ratio	1.31	0.43	0.18	0.58	0.58	0.55	1.23	0.52		0.66	1.19	
Uniform Delay, d1	64.2	51.3	48.9	68.2	59.3	49.4	59.7	18.4		61.5	34.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	162.3	0.5	0.3	16.7	2.1	1.6	118.9	0.7		9.1	88.1	
Delay (s)	226.5	51.8	49.2	84.9	61.4	51.0	178.6	19.1		70.6	122.4	
Level of Service	F	D	D	F	E	D	F	B		E	F	
Approach Delay (s)		117.1			57.0			67.3			120.4	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	98.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		

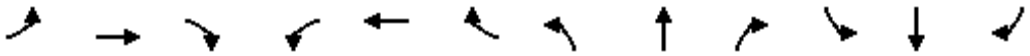
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	20	337	69	19	24	456	1392	37	26	2723	113
Future Volume (vph)	169	20	337	69	19	24	456	1392	37	26	2723	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783	1583		1755		3433	5066		1770	5055	
Flt Permitted		0.69	1.00		0.63		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1290	1583		1136		3433	5066		1770	5055	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	21	355	73	20	25	480	1465	39	27	2866	119
RTOR Reduction (vph)	0	0	279	0	13	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	199	76	0	105	0	480	1501	0	27	2979	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Effective Green, g (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Actuated g/C Ratio		0.21	0.21		0.21		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		275	338		242		697	2790		113	1946	
v/s Ratio Prot							c0.14	0.30		0.02	c0.59	
v/s Ratio Perm		c0.15	0.05		0.09							
v/c Ratio		0.72	0.22		0.43		0.69	0.54		0.24	1.53	
Uniform Delay, d1		27.3	24.3		25.5		27.6	10.7		33.3	23.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.1	0.3		1.2		2.8	0.7		1.1	241.6	
Delay (s)		36.4	24.6		26.7		30.5	11.5		34.4	264.6	
Level of Service		D	C		C		C	B		C	F	
Approach Delay (s)		28.9			26.7			16.1			262.6	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	148.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

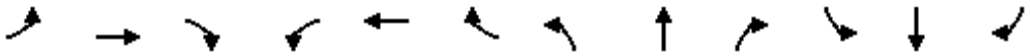
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	3	11	67	0	70	5	594	69	83	658	11
Future Volume (vph)	13	3	11	67	0	70	5	594	69	83	658	11
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
Hourly flow rate (vph)	14	3	12	74	0	77	5	653	76	91	723	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	151	734	826
Volume Left (vph)	14	74	5	91
Volume Right (vph)	12	77	76	12
Hadj (s)	-0.12	-0.17	-0.03	0.05
Departure Headway (s)	7.6	7.0	5.5	5.6
Degree Utilization, x	0.06	0.29	1.12	1.27
Capacity (veh/h)	452	503	662	659
Control Delay (s)	11.1	12.8	93.8	154.1
Approach Delay (s)	11.1	12.8	93.8	154.1
Approach LOS	B	B	F	F

Intersection Summary				
Delay	114.0			
Level of Service	F			
Intersection Capacity Utilization	95.7%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	987	144	365	1230	72	202	209	257	212	308	58
Future Volume (vph)	50	987	144	365	1230	72	202	209	257	212	308	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1818	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.25	1.00	1.00	0.50	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	468	1863	1583	935	1818	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	52	1018	148	376	1268	74	208	215	265	219	318	60
RTOR Reduction (vph)	0	0	94	0	0	26	0	0	191	0	6	0
Lane Group Flow (vph)	52	1018	54	376	1268	48	208	215	74	219	372	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	7.3	39.5	39.5	24.8	57.0	57.0	30.1	30.1	30.1	30.1	30.1	
Effective Green, g (s)	7.3	39.5	39.5	24.8	57.0	57.0	30.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.07	0.37	0.37	0.23	0.53	0.53	0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	119	1293	578	406	982	834	130	518	440	260	506	
v/s Ratio Prot	0.03	0.29		c0.21	c0.68			0.12			0.20	
v/s Ratio Perm			0.03			0.03	c0.44		0.05	0.23		
v/c Ratio	0.44	0.79	0.09	0.93	1.29	0.06	1.60	0.42	0.17	0.84	0.74	
Uniform Delay, d1	48.4	30.6	22.5	40.8	25.5	12.5	39.0	31.8	29.5	36.8	35.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	3.2	0.1	26.8	138.7	0.1	302.9	0.5	0.2	26.8	9.2	
Delay (s)	51.0	33.8	22.6	67.6	164.3	12.6	341.9	32.4	29.7	63.6	44.6	
Level of Service	D	C	C	E	F	B	F	C	C	E	D	
Approach Delay (s)		33.2			136.6			124.9			51.6	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	92.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.37		
Actuated Cycle Length (s)	108.1	Sum of lost time (s)	13.7
Intersection Capacity Utilization	116.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	677	464	520	1731	77	242	180	123	148	630	186
Future Volume (vph)	147	677	464	520	1731	77	242	180	123	148	630	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5053		1610	3329	1583	1770	3418	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5053		1610	3329	1583	1770	3418	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	158	728	499	559	1861	83	260	194	132	159	677	200
RTOR Reduction (vph)	0	0	335	0	3	0	0	0	108	0	18	0
Lane Group Flow (vph)	158	728	164	559	1941	0	148	306	24	159	859	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	17.2	38.3	38.3	25.1	46.2		21.3	21.3	21.3	15.1	15.1	
Effective Green, g (s)	17.2	38.3	38.3	25.1	46.2		21.3	21.3	21.3	15.1	15.1	
Actuated g/C Ratio	0.15	0.33	0.33	0.21	0.39		0.18	0.18	0.18	0.13	0.13	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	258	1150	514	377	1981		291	601	286	226	438	
v/s Ratio Prot	0.09	0.21		c0.32	c0.38		c0.09	0.09		0.09	c0.25	
v/s Ratio Perm			0.10						0.02			
v/c Ratio	0.61	0.63	0.32	1.48	0.98		0.51	0.51	0.08	0.70	1.96	
Uniform Delay, d1	47.2	33.8	29.9	46.4	35.3		43.5	43.5	40.1	49.2	51.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.3	1.1	0.4	231.0	15.5		1.4	0.7	0.1	9.5	440.4	
Delay (s)	51.4	34.9	30.3	277.4	50.8		44.9	44.2	40.3	58.7	491.8	
Level of Service	D	C	C	F	D		D	D	D	E	F	
Approach Delay (s)		35.1			101.4			43.5			425.3	
Approach LOS		D			F			D			F	

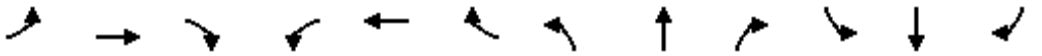
Intersection Summary			
HCM 2000 Control Delay	139.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	117.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	929	237	952	1236	33	512	196	89	44	694	113
Future Volume (vph)	53	929	237	952	1236	33	512	196	89	44	694	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3431		1770	3539	1583	1770	1775		1770	1824	
Flt Permitted	0.15	1.00		0.17	1.00	1.00	0.19	1.00		0.38	1.00	
Satd. Flow (perm)	281	3431		317	3539	1583	347	1775		715	1824	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	978	249	1002	1301	35	539	206	94	46	731	119
RTOR Reduction (vph)	0	10	0	0	0	13	0	20	0	0	7	0
Lane Group Flow (vph)	56	1217	0	1002	1301	22	539	280	0	46	843	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	173	2122		196	2189	979	93	477		192	490	
v/s Ratio Prot		0.35			0.37			0.16			0.46	
v/s Ratio Perm	0.20			c3.16		0.01	c1.56			0.06		
v/c Ratio	0.32	0.57		5.11	0.59	0.02	5.80	0.59		0.24	1.72	
Uniform Delay, d1	7.3	9.0		15.2	9.2	5.9	29.2	25.4		22.9	29.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		1861.9	0.4	0.0	2181.2	5.2		2.9	332.4	
Delay (s)	8.4	9.4		1877.1	9.6	5.9	2210.5	30.6		25.8	361.7	
Level of Service	A	A		F	A	A	F	C		C	F	
Approach Delay (s)		9.3			809.9			1431.0			344.5	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	637.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	5.31		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	172.7%	ICU Level of Service	H
Analysis Period (min)	15		

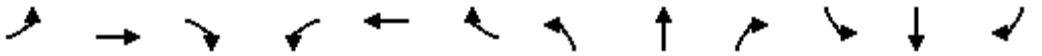
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱				↰↰		↱
Traffic Volume (vph)	0	1010	218	0	2109	579	0	0	0	306	0	397
Future Volume (vph)	0	1010	218	0	2109	579	0	0	0	306	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1052	237	0	2197	603	0	0	0	319	0	414
RTOR Reduction (vph)	0	0	85	0	0	143	0	0	0	0	0	15
Lane Group Flow (vph)	0	1052	152	0	2197	460	0	0	0	319	0	399
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		6			2					8		
Permitted Phases			6			2						8
Actuated Green, G (s)		63.2	63.2		63.2	63.2				26.0		26.0
Effective Green, g (s)		63.2	63.2		63.2	63.2				26.0		26.0
Actuated g/C Ratio		0.64	0.64		0.64	0.64				0.26		0.26
Clearance Time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3269	1017		3269	1017				908		418
v/s Ratio Prot		0.21			c0.43					0.09		
v/s Ratio Perm			0.10			0.29						c0.25
v/c Ratio		0.32	0.15		0.67	0.45				0.35		0.95
Uniform Delay, d1		7.9	6.9		11.0	8.8				29.3		35.6
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.3	0.3		0.6	0.3				1.1		33.8
Delay (s)		8.2	7.2		11.6	9.2				30.4		69.3
Level of Service		A	A		B	A				C		E
Approach Delay (s)		8.0			11.1			0.0			52.4	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1010	218	579	2109	0	0	0	0	306	0	397
Future Volume (vph)	0	1010	218	579	2109	0	0	0	0	306	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Lane Util. Factor		0.95	1.00	1.00	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	1770	5085					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	1770	5085					3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1052	237	629	2197	0	0	0	0	319	0	414
RTOR Reduction (vph)	0	0	170	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	1052	67	629	2197	0	0	0	0	319	0	362
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		6		5	2					8		
Permitted Phases			6									8
Actuated Green, G (s)		26.6	26.6	34.8	65.9					25.0		25.0
Effective Green, g (s)		26.6	26.6	34.8	65.9					25.0		25.0
Actuated g/C Ratio		0.27	0.27	0.35	0.66					0.25		0.25
Clearance Time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		941	421	615	3351					858		395
v/s Ratio Prot		c0.30		c0.36	0.43					0.09		
v/s Ratio Perm			0.04									c0.23
v/c Ratio		1.12	0.16	1.02	0.66					0.37		0.92
Uniform Delay, d1		36.7	28.1	32.6	10.2					31.0		36.5
Progression Factor		1.00	1.00	1.00	1.00					1.00		1.00
Incremental Delay, d2		67.4	0.8	42.2	0.5					1.2		28.3
Delay (s)		104.1	29.0	74.8	10.7					32.2		64.7
Level of Service		F	C	E	B					C		E
Approach Delay (s)		90.3			25.0			0.0			50.6	
Approach LOS		F			C			A			D	

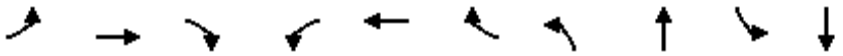
Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	626	986	0	0	1059	362	314	449	324	668	0	1497
Future Volume (vph)	626	986	0	0	1059	362	314	449	324	668	0	1497
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	639	1006	0	0	1081	369	320	488	331	682	0	1528
RTOR Reduction (vph)	0	0	0	0	0	263	0	0	73	0	0	234
Lane Group Flow (vph)	639	1006	0	0	1081	106	288	520	258	682	0	1294
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	39.1	39.1	39.1	24.9		41.5
Effective Green, g (s)	11.7	40.6			24.2	24.2	39.1	39.1	39.1	24.9		41.5
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.33	0.33	0.33	0.21		0.35
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	547	574	515	367		963
v/s Ratio Prot	c0.19	0.28			c0.21		0.17	c0.29		c0.39		0.46
v/s Ratio Perm						0.07			0.16			
v/c Ratio	1.91	0.84			1.05	0.33	0.53	0.91	0.50	1.86		1.34
Uniform Delay, d1	54.1	36.7			47.9	41.0	32.9	38.7	32.6	47.6		39.2
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	421.9	7.2			43.7	2.8	0.9	17.8	0.8	396.6		161.9
Delay (s)	476.1	43.9			91.6	43.8	33.8	56.5	33.3	444.1		201.1
Level of Service	F	D			F	D	C	E	C	F		F
Approach Delay (s)		211.8			79.4			44.1			276.1	
Approach LOS		F			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	174.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	115.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	310	461	287	153	61	382	2139	90	2902
v/c Ratio	0.78	0.54	0.90	0.67	0.34	0.23	1.12	1.10	0.26	1.49
Control Delay	63.2	53.5	39.6	63.0	53.9	8.8	131.4	91.0	48.9	252.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.2	53.5	39.6	63.0	53.9	8.8	131.4	91.0	48.9	252.1
Queue Length 50th (ft)	186	127	140	124	63	0	~389	~786	67	~1296
Queue Length 95th (ft)	244	180	#325	170	99	28	#606	#912	123	#1422
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	664	685	551	664	685	368	342	1944	342	1954
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.45	0.84	0.43	0.22	0.17	1.12	1.10	0.26	1.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	489	3	396	40	369	1762	15	2561	375
v/c Ratio	0.87	0.01	0.67	0.37	0.75	0.53	0.17	0.97	0.41
Control Delay	73.9	49.3	10.9	73.2	67.6	15.0	68.9	45.9	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	49.3	10.9	73.2	67.6	15.0	68.9	45.9	12.3
Queue Length 50th (ft)	228	2	0	36	171	278	14	~866	97
Queue Length 95th (ft)	#311	12	100	76	218	429	38	#1084	198
Internal Link Dist (ft)		523		508		721		258	
Turn Bay Length (ft)	470				510		235		
Base Capacity (vph)	580	314	596	140	701	3341	361	2636	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.01	0.66	0.29	0.53	0.53	0.04	0.97	0.41

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

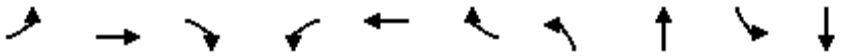
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	157	70	2188	3145
v/c Ratio	0.68	0.40	0.78	1.33
Control Delay	44.0	45.7	7.8	170.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.0	45.7	7.8	170.5
Queue Length 50th (ft)	61	39	272	~1294
Queue Length 95th (ft)	#156	81	354	#1497
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	231	988	2790	2367
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.07	0.78	1.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	414	428	255	26	239	295	659	1523	116	3022
v/c Ratio	1.30	0.57	0.54	0.35	0.64	0.65	1.22	0.52	0.66	1.17
Control Delay	203.3	27.1	10.3	79.2	68.3	36.3	163.0	19.0	78.0	110.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	203.3	27.1	10.3	79.2	68.3	36.3	163.0	19.0	78.0	110.9
Queue Length 50th (ft)	~246	92	0	23	111	154	~377	293	103	~1181
Queue Length 95th (ft)	#368	153	87	58	157	247	#521	381	172	#1318
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	319	884	526	76	633	496	540	2947	228	2588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.30	0.48	0.48	0.34	0.38	0.59	1.22	0.52	0.51	1.17

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	199	355	118	480	1504	27	2985
v/c Ratio	0.72	0.57	0.46	0.69	0.51	0.10	1.53
Control Delay	43.8	7.2	28.0	32.8	11.9	27.8	265.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	7.2	28.0	32.8	11.9	27.8	265.7
Queue Length 50th (ft)	85	0	40	106	108	11	~751
Queue Length 95th (ft)	#175	63	89	147	242	32	#879
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	292	634	271	826	2941	378	1947
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.56	0.44	0.58	0.51	0.07	1.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

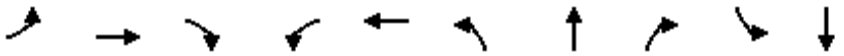
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	1018	148	376	1268	74	208	215	265	219	378
v/c Ratio	0.37	0.80	0.22	0.92	1.28	0.09	1.59	0.41	0.42	0.84	0.73
Control Delay	55.3	36.0	4.5	70.8	160.3	5.7	328.3	35.7	6.2	65.5	45.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	36.0	4.5	70.8	160.3	5.7	328.3	35.7	6.2	65.5	45.2
Queue Length 50th (ft)	35	327	0	258	~1143	6	~209	123	0	145	236
Queue Length 95th (ft)	76	406	40	#466	#1468	31	#374	205	63	#300	#391
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	414	1489	751	414	989	866	131	522	634	262	515
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.68	0.20	0.91	1.28	0.09	1.59	0.41	0.42	0.84	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	158	728	499	559	1944	148	306	132	159	877
v/c Ratio	0.61	0.63	0.59	1.49	0.98	0.51	0.51	0.34	0.70	1.93
Control Delay	58.6	36.6	5.6	266.2	51.4	51.1	47.3	9.7	67.9	453.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	58.6	36.6	5.6	266.2	51.4	51.2	47.3	9.7	67.9	453.5
Queue Length 50th (ft)	111	241	1	~552	499	108	112	0	112	~511
Queue Length 95th (ft)	199	327	77	#929	#742	202	179	55	#251	#768
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	376	1688	1015	376	2415	452	936	539	226	455
Starvation Cap Reductn	0	0	0	0	0	14	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.43	0.49	1.49	0.80	0.34	0.33	0.24	0.70	1.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	56	1227	1002	1301	35	539	300	46	850
v/c Ratio	0.32	0.57	5.11	0.59	0.04	5.86	0.60	0.24	1.71
Control Delay	13.5	10.1	1871.9	10.6	2.3	2219.1	29.0	26.9	352.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.5	10.1	1871.9	10.6	2.3	2219.1	29.0	26.9	352.5
Queue Length 50th (ft)	12	166	~877	184	0	~490	118	18	~641
Queue Length 95th (ft)	38	220	#1109	241	10	#682	199	47	#863
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	173	2134	196	2189	992	92	497	192	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.57	5.11	0.59	0.04	5.86	0.60	0.24	1.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
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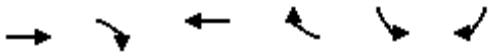
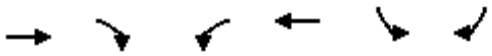
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1052	237	2197	603	319	414
v/c Ratio	0.32	0.22	0.67	0.52	0.35	0.95
Control Delay	8.2	1.4	12.3	4.5	30.7	68.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	1.4	12.3	4.5	30.7	68.4
Queue Length 50th (ft)	98	0	286	47	83	244
Queue Length 95th (ft)	121	25	336	109	122	#436
Internal Link Dist (ft)	179		254			
Turn Bay Length (ft)				105		150
Base Capacity (vph)	3269	1102	3269	1160	908	434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.22	0.67	0.52	0.35	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1052	237	629	2197	319	414
v/c Ratio	1.12	0.40	1.02	0.66	0.37	0.92
Control Delay	102.7	6.6	75.8	11.4	32.5	58.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.7	6.6	75.8	11.4	32.5	58.9
Queue Length 50th (ft)	~408	3	~428	276	87	219
Queue Length 95th (ft)	#536	60	#642	323	126	#407
Internal Link Dist (ft)	360			254		
Turn Bay Length (ft)		250				150
Base Capacity (vph)	941	590	615	3351	858	448
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.40	1.02	0.66	0.37	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	639	1006	1081	369	288	520	331	682	1528
v/c Ratio	1.91	0.84	1.05	0.64	0.53	0.90	0.56	1.86	1.28
Control Delay	451.7	44.3	89.7	12.4	36.5	59.0	25.5	427.4	160.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	451.7	44.3	89.7	12.4	36.5	59.0	25.5	427.4	160.5
Queue Length 50th (ft)	~391	376	~335	26	186	393	137	~825	~761
Queue Length 95th (ft)	#509	464	#428	124	277	#597	232	#1055	#914
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	581	572	601	611	366	1192
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.91	0.84	1.05	0.64	0.50	0.87	0.54	1.86	1.28

Intersection Summary

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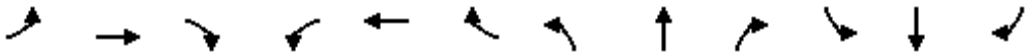
Queue shown is maximum after two cycles.

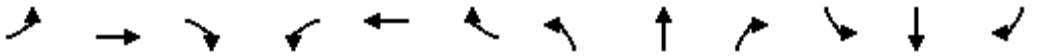
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	481	328	542	197	232	79	430	2276	327	169	1831	302
Future Volume (vph)	481	328	542	197	232	79	430	2276	327	169	1831	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4990		1770	4977	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4990		1770	4977	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	540	369	609	221	261	89	483	2557	367	190	2057	339
RTOR Reduction (vph)	0	0	262	0	0	78	0	12	0	0	16	0
Lane Group Flow (vph)	540	369	347	221	261	11	483	2912	0	190	2380	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	23.9	26.0	26.0	13.8	15.9	15.9	25.0	50.0		25.0	50.0	
Effective Green, g (s)	23.9	26.0	26.0	13.8	15.9	15.9	25.0	50.0		25.0	50.0	
Actuated g/C Ratio	0.18	0.20	0.20	0.10	0.12	0.12	0.19	0.38		0.19	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	622	698	312	359	426	190	335	1893		335	1888	
v/s Ratio Prot	c0.16	0.10		0.06	0.07		c0.27	c0.58		0.11	0.48	
v/s Ratio Perm			c0.22			0.01						
v/c Ratio	0.87	0.53	1.11	0.62	0.61	0.06	1.44	1.54		0.57	1.26	
Uniform Delay, d1	52.4	47.4	52.9	56.5	55.0	51.3	53.4	40.9		48.5	40.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.3	0.7	84.9	3.1	2.6	0.1	215.0	244.8		6.8	121.8	
Delay (s)	64.7	48.1	137.8	59.6	57.6	51.4	268.4	285.7		55.3	162.7	
Level of Service	E	D	F	E	E	D	F	F		E	F	
Approach Delay (s)		90.0			57.4			283.3			154.8	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	189.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	131.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	528	7	425	14	19	15	571	2323	2	62	1823	523
Future Volume (vph)	528	7	425	14	19	15	571	2323	2	62	1823	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1824	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1824	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	533	7	429	14	19	15	577	2346	2	63	1841	528
RTOR Reduction (vph)	0	0	343	0	0	14	0	0	0	0	0	204
Lane Group Flow (vph)	533	7	86	0	33	1	577	2348	0	63	1841	324
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	24.0	24.0	24.0		6.9	6.9	27.8	83.9		9.2	65.3	65.3
Effective Green, g (s)	24.0	24.0	24.0		6.9	6.9	27.8	83.9		9.2	65.3	65.3
Actuated g/C Ratio	0.17	0.17	0.17		0.05	0.05	0.20	0.59		0.06	0.46	0.46
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	580	314	267		88	76	672	3004		114	2338	727
v/s Ratio Prot	c0.16	0.00			c0.02		c0.17	c0.46		0.04	0.36	
v/s Ratio Perm			0.05			0.00						0.20
v/c Ratio	0.92	0.02	0.32		0.38	0.01	0.86	0.78		0.55	0.79	0.45
Uniform Delay, d1	58.0	49.2	51.8		65.5	64.3	55.2	22.1		64.4	32.5	26.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.6	0.0	0.7		2.7	0.1	10.6	2.1		5.7	2.8	2.0
Delay (s)	77.6	49.2	52.5		68.1	64.3	65.8	24.2		70.1	35.2	28.0
Level of Service	E	D	D		E	E	E	C		E	D	C
Approach Delay (s)		66.3			67.0			32.4			34.6	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	38.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	84.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	76	0	0	0	115	2956	0	0	2220	96
Future Volume (vph)	29	0	76	0	0	0	115	2956	0	0	2220	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0					4.0	5.0			5.0	
Lane Util. Factor		1.00					1.00	0.95			0.95	
Frt		0.90					1.00	1.00			0.99	
Flt Protected		0.99					0.95	1.00			1.00	
Satd. Flow (prot)		1658					1770	3539			3517	
Flt Permitted		0.99					0.95	1.00			1.00	
Satd. Flow (perm)		1658					1770	3539			3517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	30	0	79	0	0	0	120	3079	0	0	2312	100
RTOR Reduction (vph)	0	71	0	0	0	0	0	0	0	0	1	0
Lane Group Flow (vph)	0	38	0	0	0	0	120	3079	0	0	2412	0
Turn Type	Perm	NA					Prot	NA		Prot	NA	
Protected Phases		4					1	6		5	2	
Permitted Phases	4											
Actuated Green, G (s)		7.4					11.5	75.7			60.2	
Effective Green, g (s)		7.4					11.5	75.7			60.2	
Actuated g/C Ratio		0.08					0.12	0.82			0.65	
Clearance Time (s)		4.0					4.0	5.0			5.0	
Vehicle Extension (s)		3.0					3.0	3.0			3.0	
Lane Grp Cap (vph)		133					221	2908			2298	
v/s Ratio Prot							0.07	c0.87			0.69	
v/s Ratio Perm		0.02										
v/c Ratio		0.29					0.54	1.06			1.05	
Uniform Delay, d1		39.9					37.8	8.2			15.9	
Progression Factor		1.00					1.00	1.00			1.00	
Incremental Delay, d2		1.2					2.7	34.9			33.3	
Delay (s)		41.1					40.5	43.1			49.3	
Level of Service		D					D	D			D	
Approach Delay (s)		41.1			0.0			43.0			49.3	
Approach LOS		D			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	92.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	683	191	807	14	146	145	623	2243	22	152	1698	444
Future Volume (vph)	683	191	807	14	146	145	623	2243	22	152	1698	444
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.90	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3045	1441	1770	3539	1583	3433	5078		1770	4927	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3045	1441	1770	3539	1583	3433	5078		1770	4927	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	704	197	832	14	151	149	642	2312	23	157	1751	458
RTOR Reduction (vph)	0	251	251	0	0	88	0	1	0	0	30	0
Lane Group Flow (vph)	704	362	165	14	151	61	642	2334	0	157	2179	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	26.0	38.2	38.2	2.0	14.2	27.2	24.0	69.0		13.0	58.0	
Effective Green, g (s)	26.0	38.2	38.2	2.0	14.2	27.2	24.0	69.0		13.0	58.0	
Actuated g/C Ratio	0.19	0.27	0.27	0.01	0.10	0.20	0.17	0.50		0.09	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	641	835	395	25	361	354	591	2517		165	2052	
v/s Ratio Prot	c0.21	c0.12		0.01	0.04	0.02	c0.19	0.46		0.09	c0.44	
v/s Ratio Perm			0.11			0.02						
v/c Ratio	1.10	0.43	0.42	0.56	0.42	0.17	1.09	0.93		0.95	1.06	
Uniform Delay, d1	56.6	41.6	41.4	68.2	58.6	46.6	57.6	32.8		62.8	40.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	65.4	0.4	0.7	25.6	0.8	0.2	62.6	7.4		55.5	38.7	
Delay (s)	122.0	42.0	42.1	93.8	59.4	46.9	120.2	40.2		118.3	79.3	
Level of Service	F	D	D	F	E	D	F	D		F	E	
Approach Delay (s)		74.5			55.0			57.5			81.9	
Approach LOS		E			D			E			F	

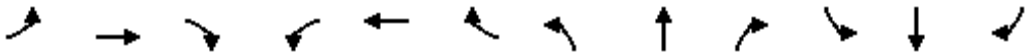
Intersection Summary			
HCM 2000 Control Delay	69.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	139.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	230	20	434	51	12	18	414	2803	47	30	1733	155
Future Volume (vph)	230	20	434	51	12	18	414	2803	47	30	1733	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1752		3433	5073		1770	5023	
Flt Permitted		0.72	1.00		0.57		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1349	1583		1028		3433	5073		1770	5023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	242	21	457	54	13	19	436	2951	49	32	1824	163
RTOR Reduction (vph)	0	0	333	0	14	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	263	124	0	72	0	436	2998	0	32	1974	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		14.6	40.8		4.8	29.0	
Effective Green, g (s)		16.4	16.4		16.4		14.6	40.8		4.8	29.0	
Actuated g/C Ratio		0.22	0.22		0.22		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		295	347		225		670	2767		113	1947	
v/s Ratio Prot							c0.13	c0.59		0.02	0.39	
v/s Ratio Perm		c0.19	0.08		0.07							
v/c Ratio		0.89	0.36		0.32		0.65	1.08		0.28	1.01	
Uniform Delay, d1		28.3	24.7		24.5		27.7	17.0		33.4	22.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		26.7	0.6		0.8		2.3	44.7		1.4	23.9	
Delay (s)		55.0	25.4		25.3		30.0	61.7		34.7	46.8	
Level of Service		E	C		C		C	E		C	D	
Approach Delay (s)		36.2			25.3			57.7			46.6	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

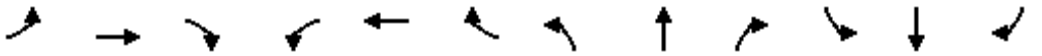
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	8	11	95	5	98	21	664	60	68	607	11
Future Volume (vph)	11	8	11	95	5	98	21	664	60	68	607	11
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
Hourly flow rate (vph)	12	9	12	104	5	108	23	730	66	75	667	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	217	819	754
Volume Left (vph)	12	104	23	75
Volume Right (vph)	12	108	66	12
Hadj (s)	-0.11	-0.17	-0.01	0.04
Departure Headway (s)	8.0	7.0	5.8	5.9
Degree Utilization, x	0.07	0.42	1.33	1.23
Capacity (veh/h)	428	501	630	621
Control Delay (s)	11.6	15.0	176.6	138.6
Approach Delay (s)	11.6	15.0	176.6	138.6
Approach LOS	B	C	F	F

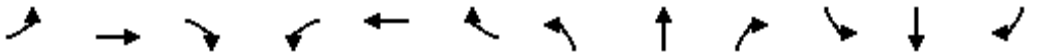
Intersection Summary				
Delay	138.7			
Level of Service	F			
Intersection Capacity Utilization	88.3%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	1260	148	431	1082	66	189	492	441	126	226	56
Future Volume (vph)	140	1260	148	431	1082	66	189	492	441	126	226	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1807	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.36	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	673	1863	1583	248	1807	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	144	1299	153	444	1115	68	195	507	455	130	233	58
RTOR Reduction (vph)	0	0	78	0	0	28	0	0	292	0	8	0
Lane Group Flow (vph)	144	1299	75	444	1115	40	195	507	163	130	283	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	14.5	44.7	44.7	25.0	55.2	55.2	30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	14.5	44.7	44.7	25.0	55.2	55.2	30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.13	0.39	0.39	0.22	0.49	0.49	0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	226	1395	623	390	906	770	178	492	418	65	478	
v/s Ratio Prot	0.08	0.37		c0.25	c0.60			0.27			0.16	
v/s Ratio Perm			0.05			0.03	0.29		0.10	c0.52		
v/c Ratio	0.64	0.93	0.12	1.14	1.23	0.05	1.10	1.03	0.39	2.00	0.59	
Uniform Delay, d1	47.0	32.9	21.8	44.2	29.1	15.3	41.7	41.7	34.2	41.7	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	5.8	11.3	0.1	88.9	113.5	0.1	95.3	48.6	0.6	499.9	5.3	
Delay (s)	52.7	44.2	21.9	133.1	142.6	15.4	137.0	90.3	34.8	541.6	41.7	
Level of Service	D	D	C	F	F	B	F	F	C	F	D	
Approach Delay (s)		42.9			134.7			76.4			196.0	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	95.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.46		
Actuated Cycle Length (s)	113.4	Sum of lost time (s)	13.7
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1676	260	176	1007	157	586	848	460	138	235	152
Future Volume (vph)	404	1676	260	176	1007	157	586	848	460	138	235	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4982		1610	3369	1583	1770	3331	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4982		1610	3369	1583	1770	3331	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	434	1802	280	189	1083	169	630	912	495	148	253	163
RTOR Reduction (vph)	0	0	78	0	15	0	0	0	230	0	71	0
Lane Group Flow (vph)	434	1802	202	189	1237	0	498	1044	265	148	345	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.0	56.1	56.1	19.7	50.8		33.0	33.0	33.0	15.0	15.0	
Effective Green, g (s)	25.0	56.1	56.1	19.7	50.8		33.0	33.0	33.0	15.0	15.0	
Actuated g/C Ratio	0.18	0.40	0.40	0.14	0.36		0.23	0.23	0.23	0.11	0.11	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	312	1400	626	245	1784		374	784	368	187	352	
v/s Ratio Prot	c0.25	c0.51		0.11	0.25		0.31	c0.31		0.08	c0.10	
v/s Ratio Perm			0.13						0.17			
v/c Ratio	1.39	1.29	0.32	0.77	0.69		1.33	1.33	0.72	0.79	0.98	
Uniform Delay, d1	58.4	42.9	29.7	58.9	38.9		54.4	54.4	50.1	61.9	63.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	194.5	134.7	0.3	13.9	1.2		166.5	157.9	6.6	20.0	42.7	
Delay (s)	252.9	177.6	30.0	72.8	40.0		220.9	212.3	56.7	81.9	106.0	
Level of Service	F	F	C	E	D		F	F	E	F	F	
Approach Delay (s)		174.2			44.3			176.6			99.6	
Approach LOS		F			D			F			F	

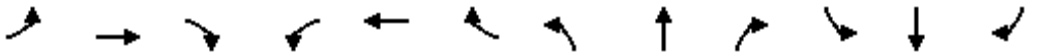
Intersection Summary			
HCM 2000 Control Delay	140.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.31		
Actuated Cycle Length (s)	141.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	109.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	1501	240	758	1004	58	874	802	43	33	362	74
Future Volume (vph)	119	1501	240	758	1004	58	874	802	43	33	362	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3466		1770	3539	1583	1770	1849		1770	1815	
Flt Permitted	0.22	1.00		0.08	1.00	1.00	0.19	1.00		0.19	1.00	
Satd. Flow (perm)	411	3466		151	3539	1583	347	1849		347	1815	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	1580	253	798	1057	61	920	844	45	35	381	78
RTOR Reduction (vph)	0	16	0	0	0	8	0	2	0	0	10	0
Lane Group Flow (vph)	125	1817	0	798	1057	53	920	887	0	35	449	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	254	2144		93	2189	979	93	496		93	487	
v/s Ratio Prot		0.52			0.30			0.48			0.25	
v/s Ratio Perm	0.30			c5.30		0.03	c2.65			0.10		
v/c Ratio	0.49	0.85		8.58	0.48	0.05	9.89	1.79		0.38	0.92	
Uniform Delay, d1	8.4	12.2		15.2	8.3	6.0	29.2	29.2		23.8	28.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	3.3		3433.1	0.2	0.0	4023.0	362.6		11.2	25.5	
Delay (s)	9.9	15.5		3448.3	8.5	6.0	4052.3	391.9		35.0	54.0	
Level of Service	A	B		F	A	A	F	F		D	D	
Approach Delay (s)		15.2			1441.1			2253.4			52.6	
Approach LOS		B			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	1116.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	8.94		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	178.1%	ICU Level of Service	H
Analysis Period (min)	15		

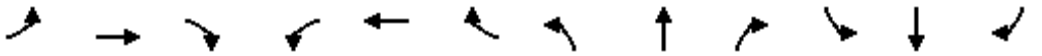
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱				↰↰		↱
Traffic Volume (vph)	0	1628	499	0	1793	292	0	0	0	454	0	379
Future Volume (vph)	0	1628	499	0	1793	292	0	0	0	454	0	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1696	542	0	1868	304	0	0	0	473	0	395
RTOR Reduction (vph)	0	0	201	0	0	85	0	0	0	0	0	15
Lane Group Flow (vph)	0	1696	341	0	1868	219	0	0	0	473	0	380
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		6			2					8		
Permitted Phases			6			2						8
Actuated Green, G (s)		61.9	61.9		61.9	61.9				27.3		27.3
Effective Green, g (s)		61.9	61.9		61.9	61.9				27.3		27.3
Actuated g/C Ratio		0.63	0.63		0.63	0.63				0.28		0.28
Clearance Time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3202	996		3202	996				953		439
v/s Ratio Prot		0.33			c0.37					0.14		
v/s Ratio Perm			0.22			0.14						c0.24
v/c Ratio		0.53	0.34		0.58	0.22				0.50		0.87
Uniform Delay, d1		10.1	8.6		10.7	7.8				29.7		33.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.6	0.9		0.3	0.1				1.8		19.8
Delay (s)		10.7	9.5		10.9	7.9				31.6		53.6
Level of Service		B	A		B	A				C		D
Approach Delay (s)		10.5			10.5			0.0			41.6	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1628	499	292	1793	0	0	0	0	454	0	379
Future Volume (vph)	0	1628	499	292	1793	0	0	0	0	454	0	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Lane Util. Factor		0.95	1.00	1.00	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	1770	5085					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	1770	5085					3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1696	542	317	1868	0	0	0	0	473	0	395
RTOR Reduction (vph)	0	0	220	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	1696	322	317	1868	0	0	0	0	473	0	348
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		6		5	2					8		
Permitted Phases			6									8
Actuated Green, G (s)		40.4	40.4	22.2	67.1					29.2		29.2
Effective Green, g (s)		40.4	40.4	22.2	67.1					29.2		29.2
Actuated g/C Ratio		0.38	0.38	0.21	0.64					0.28		0.28
Clearance Time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1356	606	372	3237					951		438
v/s Ratio Prot		c0.48		c0.18	0.37					0.14		
v/s Ratio Perm			0.20									c0.22
v/c Ratio		1.25	0.53	0.85	0.58					0.50		0.79
Uniform Delay, d1		32.5	25.2	40.0	11.0					31.9		35.3
Progression Factor		1.00	1.00	1.00	1.00					1.00		1.00
Incremental Delay, d2		119.1	3.3	16.9	0.3					1.9		13.8
Delay (s)		151.6	28.5	56.9	11.3					33.8		49.1
Level of Service		F	C	E	B					C		D
Approach Delay (s)		121.8			17.9			0.0			40.8	
Approach LOS		F			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	65.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	105.4	Sum of lost time (s)	13.6
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		

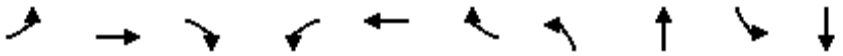
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1210	925	0	0	1147	803	129	552	119	622	0	1131
Future Volume (vph)	1210	925	0	0	1147	803	129	552	119	622	0	1131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1235	944	0	0	1170	819	132	600	121	635	0	1154
RTOR Reduction (vph)	0	0	0	0	0	232	0	0	64	0	0	544
Lane Group Flow (vph)	1235	944	0	0	1170	587	119	613	57	635	0	610
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	47.6	47.6	47.6	17.8		44.0
Effective Green, g (s)	21.3	49.2			23.2	23.2	47.6	47.6	47.6	17.8		44.0
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.37	0.37	0.37	0.14		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	615	647	579	242		943
v/s Ratio Prot	c0.36	0.27			0.23		0.07	c0.35		c0.36		0.22
v/s Ratio Perm						c0.37			0.04			
v/c Ratio	2.20	0.71			1.29	2.08	0.19	0.95	0.10	2.62		0.65
Uniform Delay, d1	54.4	34.2			53.4	53.4	28.1	40.0	27.1	56.1		36.4
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	544.7	3.1			138.8	497.9	0.2	23.0	0.1	742.6		1.5
Delay (s)	599.0	37.4			192.2	551.3	28.3	63.0	27.2	798.7		38.0
Level of Service	F	D			F	F	C	E	C	F		D
Approach Delay (s)		355.7			340.1			53.1			308.0	
Approach LOS		F			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	300.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	136.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues
1: Harder Rd & Mission Blvd

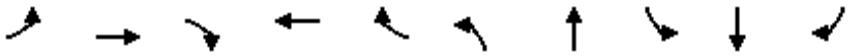


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	540	369	609	221	261	89	483	2924	190	2396
v/c Ratio	0.87	0.53	1.06	0.62	0.61	0.33	1.44	1.53	0.57	1.26
Control Delay	67.8	50.9	78.5	64.3	61.8	13.6	253.1	274.3	56.7	156.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	50.9	78.5	64.3	61.8	13.6	253.1	274.3	56.7	156.0
Queue Length 50th (ft)	231	150	~333	94	114	0	~561	~1291	149	~941
Queue Length 95th (ft)	#326	207	#568	137	158	49	#803	#1426	237	#1074
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	651	698	574	651	671	372	335	1905	335	1904
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.53	1.06	0.34	0.39	0.24	1.44	1.53	0.57	1.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	533	7	429	33	15	577	2348	63	1841	528
v/c Ratio	0.92	0.02	0.70	0.32	0.09	0.86	0.77	0.49	0.78	0.56
Control Delay	79.9	49.6	12.7	71.6	1.0	68.6	25.1	74.9	35.9	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.9	49.6	12.7	71.6	1.0	68.6	25.1	74.9	35.9	10.4
Queue Length 50th (ft)	253	5	13	30	0	265	604	57	536	91
Queue Length 95th (ft)	#357	21	125	66	0	335	751	105	624	213
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	610	141	201	711	3061	361	2366	938
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.02	0.70	0.23	0.07	0.81	0.77	0.17	0.78	0.56

Intersection Summary

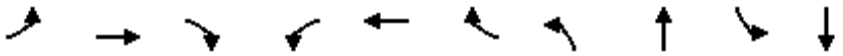
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	NBL	NBT	SBT
Lane Group Flow (vph)	109	120	3079	2413
v/c Ratio	0.53	0.54	1.06	1.05
Control Delay	26.1	47.5	46.1	52.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	26.1	47.5	46.1	52.0
Queue Length 50th (ft)	18	66	~1042	~812
Queue Length 95th (ft)	71	125	#1275	#1077
Internal Link Dist (ft)	243		381	226
Turn Bay Length (ft)		225		
Base Capacity (vph)	248	962	2907	2297
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.12	1.06	1.05

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	704	613	416	14	151	149	642	2335	157	2209
v/c Ratio	1.08	0.56	0.64	0.22	0.50	0.36	1.07	0.91	0.93	1.04
Control Delay	109.8	20.0	13.4	73.4	65.4	16.7	108.3	37.7	115.1	69.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.8	20.0	13.4	73.4	65.4	16.7	108.3	37.7	115.1	69.0
Queue Length 50th (ft)	~355	103	50	12	68	29	~321	671	140	~760
Queue Length 95th (ft)	#511	181	189	38	106	91	#471	814	#295	#916
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	653	1254	714	64	647	417	602	2565	168	2120
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.49	0.58	0.22	0.23	0.36	1.07	0.91	0.93	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	263	457	86	436	3000	32	1987
v/c Ratio	0.89	0.67	0.36	0.65	1.03	0.11	1.01
Control Delay	61.5	9.4	24.8	32.3	43.9	28.1	49.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	9.4	24.8	32.3	43.9	28.1	49.1
Queue Length 50th (ft)	118	11	26	96	375	13	~368
Queue Length 95th (ft)	#246	93	66	134	#782	36	#507
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	306	688	247	826	2920	378	1961
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.66	0.35	0.53	1.03	0.08	1.01

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

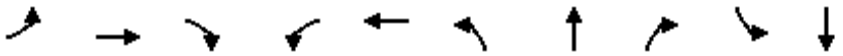
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	144	1299	153	444	1115	68	195	507	455	130	291
v/c Ratio	0.64	0.93	0.22	1.14	1.23	0.09	1.10	1.03	0.64	2.00	0.60
Control Delay	59.2	45.9	6.4	129.7	141.8	6.6	137.1	90.0	10.6	522.7	41.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.2	45.9	6.4	129.7	141.8	6.6	137.1	90.0	10.6	522.7	41.1
Queue Length 50th (ft)	102	470	11	~380	~1007	5	~162	~398	33	~148	180
Queue Length 95th (ft)	161	#617	52	#580	#1330	32	#310	#607	137	#273	273
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	390	1404	706	390	906	798	177	492	710	65	485
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.93	0.22	1.14	1.23	0.09	1.10	1.03	0.64	2.00	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	434	1802	280	189	1252	498	1044	495	148	416
v/c Ratio	1.39	1.29	0.40	0.77	0.70	1.33	1.33	0.83	0.79	0.99
Control Delay	237.4	171.7	18.3	79.4	40.4	207.7	199.7	33.0	90.9	90.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.6	1.7	7.8	0.0	0.0
Total Delay	237.4	171.7	18.3	79.4	40.4	210.3	201.4	40.8	90.9	90.9
Queue Length 50th (ft)	~535	~1118	96	170	354	~657	~689	185	136	168
Queue Length 95th (ft)	#782	#1316	183	258	407	#941	#870	#387	#262	#296
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	312	1398	703	312	1983	374	784	598	187	422
Starvation Cap Reductn	0	0	0	0	0	78	181	74	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.39	1.29	0.40	0.61	0.63	1.68	1.73	0.94	0.79	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

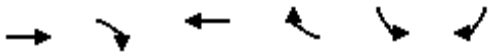
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	1833	798	1057	61	920	889	35	459
v/c Ratio	0.49	0.85	8.58	0.48	0.06	10.00	1.79	0.38	0.92
Control Delay	16.6	17.0	3439.4	9.2	4.7	4077.3	385.2	37.8	55.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	17.0	3439.4	9.2	4.7	4077.3	385.2	37.8	55.1
Queue Length 50th (ft)	31	339	~765	135	7	~903	~685	14	217
Queue Length 95th (ft)	83	452	#983	178	21	#1131	#909	44	#397
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	254	2159	93	2189	987	92	498	92	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.85	8.58	0.48	0.06	10.00	1.79	0.38	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

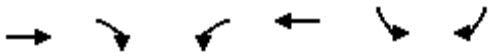
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1696	542	1868	304	473	395
v/c Ratio	0.53	0.45	0.58	0.28	0.50	0.87
Control Delay	10.9	2.0	11.6	2.8	31.9	53.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	2.0	11.6	2.8	31.9	53.1
Queue Length 50th (ft)	197	0	228	17	127	224
Queue Length 95th (ft)	234	36	269	49	176	#394
Internal Link Dist (ft)	179		254			
Turn Bay Length (ft)				105		
Base Capacity (vph)	3202	1197	3202	1081	953	454
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.45	0.58	0.28	0.50	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1696	542	317	1868	473	395
v/c Ratio	1.25	0.66	0.85	0.58	0.50	0.81
Control Delay	149.1	13.1	62.0	11.8	34.6	44.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	149.1	13.1	62.0	11.8	34.6	44.9
Queue Length 50th (ft)	~784	97	207	242	142	218
Queue Length 95th (ft)	#922	223	#339	282	193	#381
Internal Link Dist (ft)	347			254		
Turn Bay Length (ft)					200	
Base Capacity (vph)	1357	827	413	3355	951	485
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.66	0.77	0.56	0.50	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	1235	944	1170	819	119	613	121	635	1154
v/c Ratio	2.20	0.71	1.29	1.59	0.19	0.95	0.19	2.62	0.78
Control Delay	570.8	37.7	181.3	298.3	28.6	64.7	7.8	764.9	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	570.8	37.7	181.3	298.3	28.6	64.7	7.8	764.9	14.7
Queue Length 50th (ft)	~860	352	~459	~781	70	514	11	~915	149
Queue Length 95th (ft)	#995	430	#554	#1032	118	#757	52	#1148	254
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	515	632	665	658	242	1484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.20	0.71	1.29	1.59	0.19	0.92	0.18	2.62	0.78

Intersection Summary

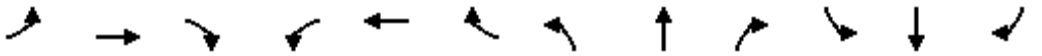
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	383	276	413	257	136	54	345	1664	262	80	2398	196
Future Volume (vph)	383	276	413	257	136	54	345	1664	262	80	2398	196
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5028	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4982		1770	5028	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	430	310	464	289	153	61	388	1870	294	90	2694	220
RTOR Reduction (vph)	0	0	254	0	0	53	0	14	0	0	6	0
Lane Group Flow (vph)	430	310	210	289	153	8	388	2150	0	90	2908	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	20.8	21.3	21.3	16.2	16.7	16.7	25.1	50.2		25.1	50.2	
Effective Green, g (s)	20.8	21.3	21.3	16.2	16.7	16.7	25.1	50.2		25.1	50.2	
Actuated g/C Ratio	0.16	0.16	0.16	0.12	0.13	0.13	0.19	0.39		0.19	0.39	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	550	580	259	428	455	203	342	1926		342	1944	
v/s Ratio Prot	c0.13	0.09		0.08	0.04		c0.22	0.43		0.05	c0.58	
v/s Ratio Perm			c0.13			0.00						
v/c Ratio	0.78	0.53	0.81	0.68	0.34	0.04	1.13	1.12		0.26	1.50	
Uniform Delay, d1	52.3	49.7	52.3	54.3	51.5	49.5	52.4	39.8		44.5	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	1.0	17.2	4.2	0.4	0.1	90.3	60.1		1.9	225.9	
Delay (s)	59.5	50.7	69.5	58.5	51.9	49.6	142.6	99.9		46.4	265.7	
Level of Service	E	D	E	E	D	D	F	F		D	F	
Approach Delay (s)		61.1			55.4			106.4			259.1	
Approach LOS		E			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	158.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	129.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	484	9	400	24	32	10	380	1757	5	21	2545	371
Future Volume (vph)	484	9	400	24	32	10	380	1757	5	21	2545	371
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1824	1583	3433	5083		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1824	1583	3433	5083		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	489	9	404	24	32	10	384	1775	5	21	2571	375
RTOR Reduction (vph)	0	0	332	0	0	9	0	0	0	0	0	95
Lane Group Flow (vph)	489	9	72	0	56	1	384	1780	0	21	2571	280
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	23.4	23.4	23.4		8.0	8.0	21.1	87.7		4.9	71.5	71.5
Effective Green, g (s)	23.4	23.4	23.4		8.0	8.0	21.1	87.7		4.9	71.5	71.5
Actuated g/C Ratio	0.16	0.16	0.16		0.06	0.06	0.15	0.62		0.03	0.50	0.50
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	565	307	260		102	89	510	3139		61	2560	797
v/s Ratio Prot	c0.14	0.00			c0.03		c0.11	0.35		0.01	c0.51	
v/s Ratio Perm			0.05			0.00						0.18
v/c Ratio	0.87	0.03	0.28		0.55	0.01	0.75	0.57		0.34	1.00	0.35
Uniform Delay, d1	57.8	49.8	51.9		65.2	63.2	58.0	16.0		67.0	35.2	21.3
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	13.1	0.0	0.6		5.9	0.0	6.2	0.7		3.4	18.8	1.2
Delay (s)	70.8	49.8	52.5		71.2	63.3	64.2	16.7		70.3	54.1	22.5
Level of Service	E	D	D		E	E	E	B		E	D	C
Approach Delay (s)		62.4			70.0			25.1			50.2	
Approach LOS		E			E			C			D	

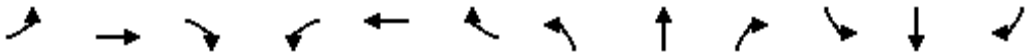
Intersection Summary			
HCM 2000 Control Delay	43.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	1	88	44	2	32	67	2100	27	18	2979	40
Future Volume (vph)	62	1	88	44	2	32	67	2100	27	18	2979	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.92			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1682			1778	1583	1770	3533		1770	3532	
Flt Permitted		0.84			0.49	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1449			912	1583	1770	3533		1770	3532	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	65	1	92	46	2	33	70	2188	28	19	3103	42
RTOR Reduction (vph)	0	39	0	0	0	31	0	1	0	0	1	0
Lane Group Flow (vph)	0	119	0	0	48	2	70	2215	0	19	3144	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		8.0			8.0	8.0	6.0	109.0		2.4	105.4	
Effective Green, g (s)		8.0			8.0	8.0	6.0	109.0		2.4	105.4	
Actuated g/C Ratio		0.06			0.06	0.06	0.05	0.82		0.02	0.80	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		87			55	95	80	2908		32	2811	
v/s Ratio Prot							c0.04	c0.63		0.01	c0.89	
v/s Ratio Perm		c0.08			0.05	0.00						
v/c Ratio		1.37			0.87	0.02	0.88	0.76		0.59	1.12	
Uniform Delay, d1		62.2			61.7	58.5	62.8	5.5		64.5	13.5	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		224.9			76.2	0.1	60.2	1.9		26.2	58.8	
Delay (s)		287.1			137.9	58.6	123.1	7.5		90.7	72.3	
Level of Service		F			F	E	F	A		F	E	
Approach Delay (s)		287.1			105.6			11.0			72.5	
Approach LOS		F			F			B			E	

Intersection Summary			
HCM 2000 Control Delay	54.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	132.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	106.7%	ICU Level of Service	G
Analysis Period (min)	15		

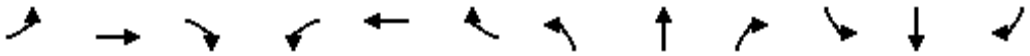
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	417	167	496	25	232	286	639	1479	11	113	2104	872
Future Volume (vph)	417	167	496	25	232	286	639	1479	11	113	2104	872
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.91	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3086	1441	1770	3539	1583	3433	5080		1770	4862	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3086	1441	1770	3539	1583	3433	5080		1770	4862	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	430	172	511	26	239	295	659	1525	11	116	2169	899
RTOR Reduction (vph)	0	188	207	0	0	86	0	0	0	0	47	0
Lane Group Flow (vph)	430	240	48	26	239	209	659	1536	0	116	3021	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	14.0	26.8	26.8	3.6	16.4	30.4	21.1	80.1		14.0	73.0	
Effective Green, g (s)	14.0	26.8	26.8	3.6	16.4	30.4	21.1	80.1		14.0	73.0	
Actuated g/C Ratio	0.10	0.19	0.19	0.03	0.12	0.21	0.15	0.57		0.10	0.52	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	339	584	272	45	410	384	511	2875		175	2508	
v/s Ratio Prot	c0.13	0.08		0.01	0.07	c0.05	c0.19	0.30		0.07	c0.62	
v/s Ratio Perm			0.03			0.08						
v/c Ratio	1.27	0.41	0.18	0.58	0.58	0.55	1.29	0.53		0.66	1.20	
Uniform Delay, d1	63.8	50.4	48.1	68.2	59.3	49.4	60.2	19.1		61.5	34.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	142.1	0.5	0.3	16.7	2.1	1.6	144.5	0.7		9.1	96.1	
Delay (s)	205.9	50.9	48.4	84.9	61.4	51.0	204.7	19.8		70.6	130.4	
Level of Service	F	D	D	F	E	D	F	B		E	F	
Approach Delay (s)		110.2			57.0			75.3			128.2	
Approach LOS		F			E			E			F	

Intersection Summary			
HCM 2000 Control Delay	103.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	141.5	Sum of lost time (s)	17.0
Intersection Capacity Utilization	110.8%	ICU Level of Service	H
Analysis Period (min)	15		

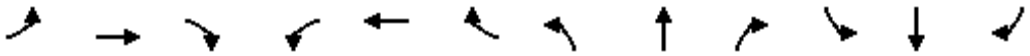
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	20	337	69	19	24	456	1400	37	26	2738	114
Future Volume (vph)	170	20	337	69	19	24	456	1400	37	26	2738	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1783	1583		1755		3433	5066		1770	5055	
Flt Permitted		0.69	1.00		0.63		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1289	1583		1132		3433	5066		1770	5055	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	179	21	355	73	20	25	480	1474	39	27	2882	120
RTOR Reduction (vph)	0	0	279	0	13	0	0	3	0	0	6	0
Lane Group Flow (vph)	0	200	76	0	105	0	480	1510	0	27	2996	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Effective Green, g (s)		16.0	16.0		16.0		15.2	41.2		4.8	28.8	
Actuated g/C Ratio		0.21	0.21		0.21		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		275	338		242		697	2790		113	1946	
v/s Ratio Prot							c0.14	0.30		0.02	c0.59	
v/s Ratio Perm		c0.16	0.05		0.09							
v/c Ratio		0.73	0.22		0.43		0.69	0.54		0.24	1.54	
Uniform Delay, d1		27.4	24.3		25.5		27.6	10.8		33.3	23.0	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		9.2	0.3		1.2		2.8	0.8		1.1	245.5	
Delay (s)		36.6	24.6		26.7		30.5	11.5		34.4	268.5	
Level of Service		D	C		C		C	B		C	F	
Approach Delay (s)		28.9			26.7			16.1			266.4	
Approach LOS		C			C			B			F	

Intersection Summary			
HCM 2000 Control Delay	150.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	99.9%	ICU Level of Service	F
Analysis Period (min)	15		

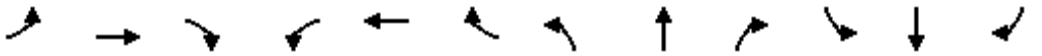
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	3	11	69	0	70	5	594	70	83	658	11
Future Volume (vph)	13	3	11	69	0	70	5	594	70	83	658	11
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
Hourly flow rate (vph)	14	3	12	76	0	77	5	653	77	91	723	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	29	153	735	826
Volume Left (vph)	14	76	5	91
Volume Right (vph)	12	77	77	12
Hadj (s)	-0.12	-0.17	-0.03	0.05
Departure Headway (s)	7.6	7.0	5.5	5.6
Degree Utilization, x	0.06	0.30	1.12	1.28
Capacity (veh/h)	451	502	661	658
Control Delay (s)	11.1	12.9	95.0	155.1
Approach Delay (s)	11.1	12.9	95.0	155.1
Approach LOS	B	B	F	F

Intersection Summary				
Delay	114.9			
Level of Service	F			
Intersection Capacity Utilization	96.0%	ICU Level of Service	F	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	999	144	366	1255	76	202	209	258	214	308	58
Future Volume (vph)	50	999	144	366	1255	76	202	209	258	214	308	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1818	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.25	1.00	1.00	0.50	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	462	1863	1583	932	1818	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	52	1030	148	377	1294	78	208	215	266	221	318	60
RTOR Reduction (vph)	0	0	93	0	0	26	0	0	192	0	6	0
Lane Group Flow (vph)	52	1030	55	377	1294	52	208	215	74	221	372	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	7.3	40.1	40.1	24.8	57.6	57.6	30.1	30.1	30.1	30.1	30.1	
Effective Green, g (s)	7.3	40.1	40.1	24.8	57.6	57.6	30.1	30.1	30.1	30.1	30.1	
Actuated g/C Ratio	0.07	0.37	0.37	0.23	0.53	0.53	0.28	0.28	0.28	0.28	0.28	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	118	1305	583	403	987	838	127	515	438	258	503	
v/s Ratio Prot	0.03	0.29		c0.21	c0.69			0.12			0.20	
v/s Ratio Perm			0.03			0.03	c0.45		0.05	0.24		
v/c Ratio	0.44	0.79	0.09	0.94	1.31	0.06	1.64	0.42	0.17	0.86	0.74	
Uniform Delay, d1	48.7	30.5	22.4	41.2	25.6	12.4	39.3	32.1	29.8	37.3	35.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	3.3	0.1	28.8	147.3	0.1	319.7	0.5	0.2	28.8	9.4	
Delay (s)	51.4	33.8	22.5	70.0	172.8	12.6	359.0	32.7	30.0	66.1	45.2	
Level of Service	D	C	C	E	F	B	F	C	C	E	D	
Approach Delay (s)		33.2			143.5			130.1			52.9	
Approach LOS		C			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	96.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.40		
Actuated Cycle Length (s)	108.7	Sum of lost time (s)	13.7
Intersection Capacity Utilization	117.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	688	464	525	1746	78	242	180	126	149	630	186
Future Volume (vph)	147	688	464	525	1746	78	242	180	126	149	630	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	5053		1610	3329	1583	1770	3418	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	5053		1610	3329	1583	1770	3418	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	158	740	499	565	1877	84	260	194	135	160	677	200
RTOR Reduction (vph)	0	0	335	0	3	0	0	0	111	0	18	0
Lane Group Flow (vph)	158	740	164	565	1958	0	148	306	24	160	859	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	17.2	38.5	38.5	25.1	46.4		21.3	21.3	21.3	15.1	15.1	
Effective Green, g (s)	17.2	38.5	38.5	25.1	46.4		21.3	21.3	21.3	15.1	15.1	
Actuated g/C Ratio	0.15	0.33	0.33	0.21	0.39		0.18	0.18	0.18	0.13	0.13	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	258	1154	516	376	1986		290	600	285	226	437	
v/s Ratio Prot	0.09	0.21		c0.32	c0.39		c0.09	0.09		0.09	c0.25	
v/s Ratio Perm			0.10						0.02			
v/c Ratio	0.61	0.64	0.32	1.50	0.99		0.51	0.51	0.09	0.71	1.96	
Uniform Delay, d1	47.3	33.9	29.9	46.5	35.5		43.6	43.6	40.2	49.3	51.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	4.3	1.2	0.4	239.7	16.8		1.5	0.7	0.1	9.7	442.5	
Delay (s)	51.5	35.1	30.2	286.2	52.3		45.2	44.4	40.4	59.0	493.9	
Level of Service	D	D	C	F	D		D	D	D	E	F	
Approach Delay (s)		35.2			104.6			43.7			426.8	
Approach LOS		D			F			D			F	

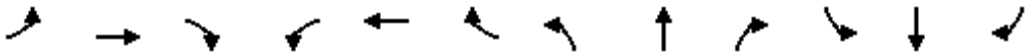
Intersection Summary			
HCM 2000 Control Delay	140.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	118.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	103.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	933	237	958	1244	33	512	196	89	44	694	113
Future Volume (vph)	53	933	237	958	1244	33	512	196	89	44	694	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3432		1770	3539	1583	1770	1775		1770	1824	
Flt Permitted	0.15	1.00		0.17	1.00	1.00	0.19	1.00		0.38	1.00	
Satd. Flow (perm)	278	3432		315	3539	1583	347	1775		715	1824	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	982	249	1008	1309	35	539	206	94	46	731	119
RTOR Reduction (vph)	0	10	0	0	0	13	0	20	0	0	7	0
Lane Group Flow (vph)	56	1221	0	1008	1309	22	539	280	0	46	843	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	172	2123		194	2189	979	93	477		192	490	
v/s Ratio Prot		0.36			0.37			0.16			0.46	
v/s Ratio Perm	0.20			c3.20		0.01	c1.56			0.06		
v/c Ratio	0.33	0.57		5.20	0.60	0.02	5.80	0.59		0.24	1.72	
Uniform Delay, d1	7.3	9.0		15.2	9.2	5.9	29.2	25.4		22.9	29.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.4		1899.6	0.4	0.0	2181.2	5.2		2.9	332.4	
Delay (s)	8.4	9.4		1914.8	9.7	5.9	2210.5	30.6		25.8	361.7	
Level of Service	A	A		F	A	A	F	C		C	F	
Approach Delay (s)		9.4			826.1			1431.0			344.5	
Approach LOS		A			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	644.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	5.36		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	173.2%	ICU Level of Service	H
Analysis Period (min)	15		

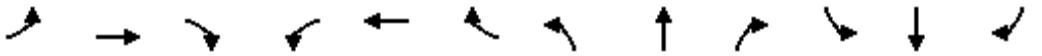
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱				↰↰		↱
Traffic Volume (vph)	0	1011	218	0	2111	584	0	0	0	306	0	397
Future Volume (vph)	0	1011	218	0	2111	584	0	0	0	306	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1053	237	0	2199	608	0	0	0	319	0	414
RTOR Reduction (vph)	0	0	85	0	0	144	0	0	0	0	0	15
Lane Group Flow (vph)	0	1053	152	0	2199	464	0	0	0	319	0	399
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		6			2					8		
Permitted Phases			6			2						8
Actuated Green, G (s)		63.2	63.2		63.2	63.2				26.0		26.0
Effective Green, g (s)		63.2	63.2		63.2	63.2				26.0		26.0
Actuated g/C Ratio		0.64	0.64		0.64	0.64				0.26		0.26
Clearance Time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3269	1017		3269	1017				908		418
v/s Ratio Prot		0.21			c0.43					0.09		
v/s Ratio Perm			0.10			0.29						c0.25
v/c Ratio		0.32	0.15		0.67	0.46				0.35		0.95
Uniform Delay, d1		7.9	6.9		11.0	8.9				29.3		35.6
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.3	0.3		0.6	0.3				1.1		33.8
Delay (s)		8.2	7.2		11.6	9.2				30.4		69.3
Level of Service		A	A		B	A				C		E
Approach Delay (s)		8.0			11.1			0.0			52.4	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		

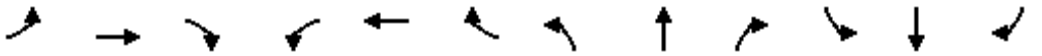
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1011	218	584	2111	0	0	0	0	306	0	397
Future Volume (vph)	0	1011	218	584	2111	0	0	0	0	306	0	397
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Lane Util. Factor		0.95	1.00	1.00	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	1770	5085					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	1770	5085					3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1053	237	635	2199	0	0	0	0	319	0	414
RTOR Reduction (vph)	0	0	170	0	0	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	1053	67	635	2199	0	0	0	0	319	0	362
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		6		5	2					8		
Permitted Phases			6									8
Actuated Green, G (s)		26.6	26.6	34.8	65.9					25.0		25.0
Effective Green, g (s)		26.6	26.6	34.8	65.9					25.0		25.0
Actuated g/C Ratio		0.27	0.27	0.35	0.66					0.25		0.25
Clearance Time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		941	421	615	3351					858		395
v/s Ratio Prot		c0.30		c0.36	0.43					0.09		
v/s Ratio Perm			0.04									c0.23
v/c Ratio		1.12	0.16	1.03	0.66					0.37		0.92
Uniform Delay, d1		36.7	28.1	32.6	10.2					31.0		36.5
Progression Factor		1.00	1.00	1.00	1.00					1.00		1.00
Incremental Delay, d2		67.8	0.8	44.9	0.5					1.2		28.3
Delay (s)		104.5	29.0	77.5	10.7					32.2		64.7
Level of Service		F	C	E	B					C		E
Approach Delay (s)		90.6			25.7			0.0			50.6	
Approach LOS		F			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	46.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	630	986	0	0	1059	362	314	452	324	668	0	1503
Future Volume (vph)	630	986	0	0	1059	362	314	452	324	668	0	1503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1764	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	643	1006	0	0	1081	369	320	491	331	682	0	1534
RTOR Reduction (vph)	0	0	0	0	0	263	0	0	73	0	0	234
Lane Group Flow (vph)	643	1006	0	0	1081	106	288	523	258	682	0	1300
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	11.7	40.6			24.2	24.2	39.3	39.3	39.3	24.7		41.3
Effective Green, g (s)	11.7	40.6			24.2	24.2	39.3	39.3	39.3	24.7		41.3
Actuated g/C Ratio	0.10	0.34			0.20	0.20	0.33	0.33	0.33	0.21		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	334	1197			1025	319	550	577	518	364		959
v/s Ratio Prot	c0.19	0.28			c0.21		0.17	c0.30		c0.39		0.47
v/s Ratio Perm						0.07			0.16			
v/c Ratio	1.93	0.84			1.05	0.33	0.52	0.91	0.50	1.87		1.36
Uniform Delay, d1	54.1	36.7			47.9	41.0	32.8	38.6	32.4	47.6		39.4
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	427.2	7.2			43.7	2.8	0.9	17.8	0.8	403.5		166.8
Delay (s)	481.4	43.9			91.6	43.8	33.7	56.4	33.2	451.1		206.2
Level of Service	F	D			F	D	C	E	C	F		F
Approach Delay (s)		214.5			79.4			43.9			281.5	
Approach LOS		F			E			D			F	

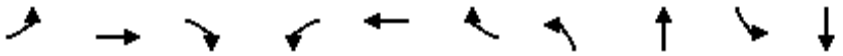
Intersection Summary			
HCM 2000 Control Delay	177.0	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	115.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	23	12	0	40	26	0
Future Volume (Veh/h)	23	12	0	40	26	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	13	0	43	28	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			38		74	32
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			38		74	32
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1572		929	1043

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	38	43	28
Volume Left	0	0	28
Volume Right	13	0	0
cSH	1700	1700	929
Volume to Capacity	0.02	0.03	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

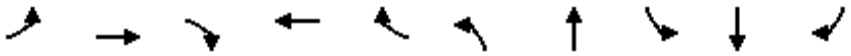


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	310	464	289	153	61	388	2164	90	2914
v/c Ratio	0.78	0.54	0.90	0.68	0.34	0.23	1.13	1.11	0.26	1.49
Control Delay	63.4	53.5	40.4	63.1	53.8	8.7	137.4	96.7	49.0	256.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.4	53.5	40.4	63.1	53.8	8.7	137.4	96.7	49.0	256.0
Queue Length 50th (ft)	186	127	143	125	63	0	~399	~803	67	~1304
Queue Length 95th (ft)	244	180	#333	171	99	28	#619	#931	123	#1432
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	664	684	551	664	684	368	342	1941	342	1950
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.45	0.84	0.44	0.22	0.17	1.13	1.11	0.26	1.49

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	489	9	404	56	10	384	1780	21	2571	375
v/c Ratio	0.87	0.03	0.68	0.47	0.05	0.75	0.55	0.23	0.99	0.42
Control Delay	73.9	49.8	11.7	76.9	0.6	67.5	17.1	70.0	51.0	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	49.8	11.7	76.9	0.6	67.5	17.1	70.0	51.0	12.8
Queue Length 50th (ft)	228	7	5	51	0	177	367	19	~935	101
Queue Length 95th (ft)	#311	25	109	98	0	225	441	48	#1101	201
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	597	141	201	701	3226	361	2590	900
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.03	0.68	0.40	0.05	0.55	0.55	0.06	0.99	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	158	48	33	70	2216	19	3145
v/c Ratio	0.80	0.48	0.15	0.40	0.85	0.15	1.33
Control Delay	59.8	56.4	8.4	45.8	14.0	43.0	171.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.8	56.4	8.4	45.8	14.0	43.0	171.0
Queue Length 50th (ft)	67	27	0	39	283	11	~1294
Queue Length 95th (ft)	#183	#74	18	81	#756	33	#1497
Internal Link Dist (ft)	243	22			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	197	101	220	987	2610	987	2365
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.48	0.15	0.07	0.85	0.02	1.33

Intersection Summary

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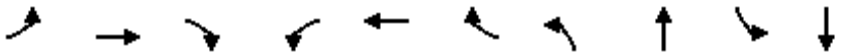
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	430	428	255	26	239	295	659	1536	116	3068
v/c Ratio	1.25	0.55	0.53	0.35	0.64	0.65	1.28	0.53	0.66	1.19
Control Delay	184.6	26.2	10.0	79.2	68.3	36.3	186.0	19.8	78.0	118.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	184.6	26.2	10.0	79.2	68.3	36.3	186.0	19.8	78.0	118.7
Queue Length 50th (ft)	~250	90	0	23	111	154	~389	302	103	~1213
Queue Length 95th (ft)	#374	150	86	58	157	247	#532	391	172	#1350
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	344	905	535	76	633	496	516	2910	228	2587
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.47	0.48	0.34	0.38	0.59	1.28	0.53	0.51	1.19

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	200	355	118	480	1513	27	3002
v/c Ratio	0.73	0.57	0.46	0.69	0.51	0.10	1.54
Control Delay	44.1	7.2	28.2	32.8	11.9	27.8	269.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	7.2	28.2	32.8	11.9	27.8	269.5
Queue Length 50th (ft)	85	0	40	106	109	11	~757
Queue Length 95th (ft)	#176	63	89	147	245	32	#885
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	292	634	269	826	2941	378	1947
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.56	0.44	0.58	0.51	0.07	1.54

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

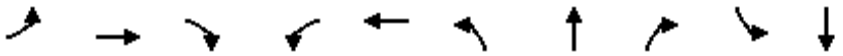
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	52	1030	148	377	1294	78	208	215	266	221	378
v/c Ratio	0.37	0.80	0.22	0.93	1.30	0.09	1.62	0.41	0.42	0.85	0.74
Control Delay	55.5	36.2	4.5	71.8	169.0	5.9	341.1	36.0	6.2	68.0	45.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.5	36.2	4.5	71.8	169.0	5.9	341.1	36.0	6.2	68.0	45.6
Queue Length 50th (ft)	36	333	0	264	~1188	8	~215	126	0	150	241
Queue Length 95th (ft)	76	413	40	#467	#1507	33	#375	205	63	#305	#391
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	411	1482	748	411	994	870	128	520	633	259	513
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.70	0.20	0.92	1.30	0.09	1.63	0.41	0.42	0.85	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	158	740	499	565	1961	148	306	135	160	877
v/c Ratio	0.61	0.64	0.59	1.50	0.99	0.51	0.51	0.34	0.71	1.93
Control Delay	58.8	36.8	5.6	273.8	52.9	51.3	47.5	9.6	68.5	455.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	58.8	36.8	5.6	273.8	52.9	51.3	47.5	9.6	68.5	455.0
Queue Length 50th (ft)	111	246	1	~562	506	108	112	0	113	~511
Queue Length 95th (ft)	200	334	77	#946	#754	203	180	56	#255	#773
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	376	1685	1014	376	2410	451	934	541	225	454
Starvation Cap Reductn	0	0	0	0	0	14	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.44	0.49	1.50	0.81	0.34	0.33	0.25	0.71	1.93

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

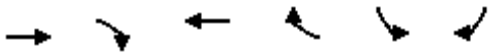
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	56	1231	1008	1309	35	539	300	46	850
v/c Ratio	0.33	0.58	5.20	0.60	0.04	5.86	0.60	0.24	1.71
Control Delay	13.7	10.1	1909.5	10.7	2.3	2219.1	29.0	26.9	352.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	10.1	1909.5	10.7	2.3	2219.1	29.0	26.9	352.5
Queue Length 50th (ft)	12	167	~884	186	0	~490	118	18	~641
Queue Length 95th (ft)	39	221	#1116	243	10	#682	199	47	#863
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	172	2134	194	2189	992	92	497	192	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.58	5.20	0.60	0.04	5.86	0.60	0.24	1.71

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

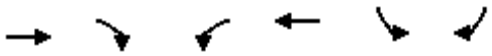
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1053	237	2199	608	319	414
v/c Ratio	0.32	0.22	0.67	0.52	0.35	0.95
Control Delay	8.2	1.4	12.4	4.5	30.7	68.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	1.4	12.4	4.5	30.7	68.4
Queue Length 50th (ft)	98	0	287	48	83	244
Queue Length 95th (ft)	121	25	336	111	122	#436
Internal Link Dist (ft)	179		254			
Turn Bay Length (ft)				105		150
Base Capacity (vph)	3269	1102	3269	1161	908	434
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.22	0.67	0.52	0.35	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1053	237	635	2199	319	414
v/c Ratio	1.12	0.40	1.03	0.66	0.37	0.92
Control Delay	103.1	6.6	78.4	11.4	32.5	58.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	103.1	6.6	78.4	11.4	32.5	58.9
Queue Length 50th (ft)	~408	3	~436	277	87	219
Queue Length 95th (ft)	#537	60	#651	323	126	#407
Internal Link Dist (ft)	360			254		
Turn Bay Length (ft)		250				150
Base Capacity (vph)	941	590	615	3351	858	448
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.40	1.03	0.66	0.37	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	643	1006	1081	369	288	523	331	682	1534
v/c Ratio	1.93	0.84	1.05	0.64	0.52	0.91	0.56	1.87	1.29
Control Delay	456.8	44.3	89.7	12.4	36.4	59.3	25.4	431.0	163.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	456.8	44.3	89.7	12.4	36.4	59.3	25.4	431.0	163.8
Queue Length 50th (ft)	~395	376	~335	26	186	397	137	~825	~767
Queue Length 95th (ft)	#512	464	#428	124	277	#603	232	#1055	#920
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	334	1197	1025	581	572	601	611	364	1189
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.93	0.84	1.05	0.64	0.50	0.87	0.54	1.87	1.29

Intersection Summary

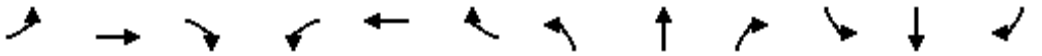
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	481	328	547	200	232	79	434	2290	329	169	1850	302
Future Volume (vph)	481	328	547	200	232	79	434	2290	329	169	1850	302
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	1770	4989		1770	4978	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	1770	4989		1770	4978	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	540	369	615	225	261	89	488	2573	370	190	2079	339
RTOR Reduction (vph)	0	0	260	0	0	78	0	12	0	0	15	0
Lane Group Flow (vph)	540	369	355	225	261	11	488	2931	0	190	2403	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	3	8		7	4		1	6		5	2	
Permitted Phases			8			4						
Actuated Green, G (s)	23.9	25.9	25.9	13.9	15.9	15.9	25.0	50.0		25.0	50.0	
Effective Green, g (s)	23.9	25.9	25.9	13.9	15.9	15.9	25.0	50.0		25.0	50.0	
Actuated g/C Ratio	0.18	0.20	0.20	0.11	0.12	0.12	0.19	0.38		0.19	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	622	695	311	362	426	190	335	1892		335	1888	
v/s Ratio Prot	c0.16	0.10		0.07	0.07		c0.28	c0.59		0.11	0.48	
v/s Ratio Perm			c0.22			0.01						
v/c Ratio	0.87	0.53	1.14	0.62	0.61	0.06	1.46	1.55		0.57	1.27	
Uniform Delay, d1	52.4	47.5	53.0	56.4	55.0	51.3	53.4	40.9		48.5	40.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	12.3	0.8	94.6	3.3	2.6	0.1	221.4	249.7		6.8	127.1	
Delay (s)	64.7	48.3	147.5	59.7	57.6	51.4	274.8	290.6		55.3	168.0	
Level of Service	E	D	F	E	E	D	F	F		E	F	
Approach Delay (s)		94.1			57.5			288.3			159.8	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay	194.5	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	131.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	528	18	439	14	31	23	582	2336	2	72	1841	523
Future Volume (vph)	528	18	439	14	31	23	582	2336	2	72	1841	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00	0.97	0.91		1.00	0.91	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583		1834	1583	3433	5085		1770	5085	1583
Flt Permitted	0.95	1.00	1.00		0.98	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583		1834	1583	3433	5085		1770	5085	1583
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	533	18	443	14	31	23	588	2360	2	73	1860	528
RTOR Reduction (vph)	0	0	343	0	0	22	0	0	0	0	0	204
Lane Group Flow (vph)	533	18	100	0	45	1	588	2362	0	73	1860	324
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	3	3		4	4		1	6		5	2	
Permitted Phases			3			4						2
Actuated Green, G (s)	24.0	24.0	24.0		7.5	7.5	27.8	82.7		9.8	64.7	64.7
Effective Green, g (s)	24.0	24.0	24.0		7.5	7.5	27.8	82.7		9.8	64.7	64.7
Actuated g/C Ratio	0.17	0.17	0.17		0.05	0.05	0.20	0.58		0.07	0.46	0.46
Clearance Time (s)	5.0	5.0	5.0		4.0	4.0	4.0	5.0		4.0	5.0	5.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	580	314	267		96	83	672	2961		122	2316	721
v/s Ratio Prot	c0.16	0.01			c0.02		c0.17	c0.46		0.04	0.37	
v/s Ratio Perm			0.06			0.00						0.20
v/c Ratio	0.92	0.06	0.37		0.47	0.01	0.88	0.80		0.60	0.80	0.45
Uniform Delay, d1	58.0	49.5	52.3		65.3	63.7	55.4	23.1		64.2	33.2	26.5
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.6	0.1	0.9		3.6	0.1	12.2	2.3		7.7	3.1	2.0
Delay (s)	77.6	49.6	53.2		68.9	63.8	67.6	25.5		71.9	36.2	28.5
Level of Service	E	D	D		E	E	E	C		E	D	C
Approach Delay (s)		66.2			67.2			33.9			35.6	
Approach LOS		E			E			C			D	

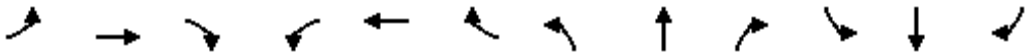
Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	2	76	33	2	26	115	2956	47	33	2219	96
Future Volume (vph)	29	2	76	33	2	26	115	2956	47	33	2219	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt		0.90			1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.99			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1661			1779	1583	1770	3531		1770	3517	
Flt Permitted		0.90			0.51	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1509			941	1583	1770	3531		1770	3517	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	30	2	79	34	2	27	120	3079	49	34	2311	100
RTOR Reduction (vph)	0	67	0	0	0	25	0	1	0	0	2	0
Lane Group Flow (vph)	0	44	0	0	36	2	120	3127	0	34	2409	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4						
Actuated Green, G (s)		7.7			7.7	7.7	11.5	109.5		3.6	101.6	
Effective Green, g (s)		7.7			7.7	7.7	11.5	109.5		3.6	101.6	
Actuated g/C Ratio		0.06			0.06	0.06	0.09	0.82		0.03	0.76	
Clearance Time (s)		4.0			4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		86			54	91	152	2889		47	2670	
v/s Ratio Prot							c0.07	c0.89		0.02	0.68	
v/s Ratio Perm		0.03			c0.04	0.00						
v/c Ratio		0.51			0.67	0.02	0.79	1.08		0.72	0.90	
Uniform Delay, d1		61.2			61.8	59.5	60.0	12.2		64.6	12.3	
Progression Factor		1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.1			26.9	0.1	23.2	44.0		42.4	5.5	
Delay (s)		66.3			88.7	59.6	83.2	56.2		107.0	17.8	
Level of Service		E			F	E	F	E		F	B	
Approach Delay (s)		66.3			76.2			57.2			19.1	
Approach LOS		E			E			E			B	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	133.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	112.1%	ICU Level of Service	H
Analysis Period (min)	15		

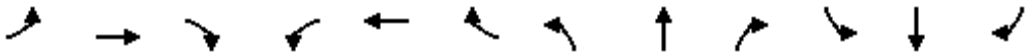
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	710	191	807	14	146	145	623	2264	22	152	1714	461
Future Volume (vph)	710	191	807	14	146	145	623	2264	22	152	1714	461
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Lane Util. Factor	0.97	0.91	0.91	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt	1.00	0.90	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3045	1441	1770	3539	1583	3433	5078		1770	4924	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3045	1441	1770	3539	1583	3433	5078		1770	4924	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	732	197	832	14	151	149	642	2334	23	157	1767	475
RTOR Reduction (vph)	0	251	251	0	0	88	0	1	0	0	31	0
Lane Group Flow (vph)	732	362	165	14	151	61	642	2356	0	157	2211	0
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	26.0	38.2	38.2	2.0	14.2	27.2	24.0	69.0		13.0	58.0	
Effective Green, g (s)	26.0	38.2	38.2	2.0	14.2	27.2	24.0	69.0		13.0	58.0	
Actuated g/C Ratio	0.19	0.27	0.27	0.01	0.10	0.20	0.17	0.50		0.09	0.42	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	5.0		4.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	641	835	395	25	361	354	591	2517		165	2051	
v/s Ratio Prot	c0.21	c0.12		0.01	0.04	0.02	c0.19	0.46		0.09	c0.45	
v/s Ratio Perm			0.11			0.02						
v/c Ratio	1.14	0.43	0.42	0.56	0.42	0.17	1.09	0.94		0.95	1.08	
Uniform Delay, d1	56.6	41.6	41.4	68.2	58.6	46.6	57.6	33.0		62.8	40.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	81.6	0.4	0.7	25.6	0.8	0.2	62.6	8.2		55.5	44.7	
Delay (s)	138.2	42.0	42.1	93.8	59.4	46.9	120.2	41.2		118.3	85.3	
Level of Service	F	D	D	F	E	D	F	D		F	F	
Approach Delay (s)		82.0			55.0			58.1			87.4	
Approach LOS		F			D			E			F	

Intersection Summary			
HCM 2000 Control Delay	73.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	139.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	F
Analysis Period (min)	15		

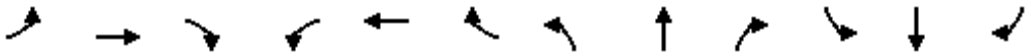
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	231	20	434	51	12	18	414	2817	47	30	1744	156
Future Volume (vph)	231	20	434	51	12	18	414	2817	47	30	1744	156
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Lane Util. Factor		1.00	1.00		1.00		0.97	0.91		1.00	0.91	
Frt		1.00	0.85		0.97		1.00	1.00		1.00	0.99	
Flt Protected		0.96	1.00		0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1781	1583		1752		3433	5073		1770	5023	
Flt Permitted		0.72	1.00		0.57		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1349	1583		1024		3433	5073		1770	5023	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	243	21	457	54	13	19	436	2965	49	32	1836	164
RTOR Reduction (vph)	0	0	333	0	14	0	0	2	0	0	13	0
Lane Group Flow (vph)	0	264	124	0	72	0	436	3012	0	32	1987	0
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4								
Actuated Green, G (s)		16.4	16.4		16.4		14.6	40.8		4.8	29.0	
Effective Green, g (s)		16.4	16.4		16.4		14.6	40.8		4.8	29.0	
Actuated g/C Ratio		0.22	0.22		0.22		0.20	0.55		0.06	0.39	
Clearance Time (s)		4.2	4.2		4.2		4.7	4.9		3.7	5.9	
Vehicle Extension (s)		3.0	3.0		3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		295	347		224		670	2767		113	1947	
v/s Ratio Prot							c0.13	c0.59		0.02	0.40	
v/s Ratio Perm		c0.20	0.08		0.07							
v/c Ratio		0.89	0.36		0.32		0.65	1.09		0.28	1.02	
Uniform Delay, d1		28.4	24.7		24.5		27.7	17.0		33.4	22.9	
Progression Factor		1.00	1.00		1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.2	0.6		0.8		2.3	46.7		1.4	25.8	
Delay (s)		55.5	25.4		25.4		30.0	63.7		34.7	48.7	
Level of Service		E	C		C		C	E		C	D	
Approach Delay (s)		36.4			25.4			59.4			48.4	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	52.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	74.8	Sum of lost time (s)	14.8
Intersection Capacity Utilization	95.5%	ICU Level of Service	F
Analysis Period (min)	15		

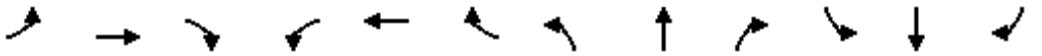
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	8	11	97	5	98	21	664	62	68	607	11
Future Volume (vph)	11	8	11	97	5	98	21	664	62	68	607	11
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
Hourly flow rate (vph)	12	9	12	107	5	108	23	730	68	75	667	12

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	33	220	821	754
Volume Left (vph)	12	107	23	75
Volume Right (vph)	12	108	68	12
Hadj (s)	-0.11	-0.16	-0.01	0.04
Departure Headway (s)	8.0	7.0	5.8	5.9
Degree Utilization, x	0.07	0.43	1.33	1.24
Capacity (veh/h)	427	501	629	619
Control Delay (s)	11.6	15.2	179.2	139.9
Approach Delay (s)	11.6	15.2	179.2	139.9
Approach LOS	B	C	F	F

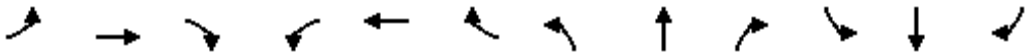
Intersection Summary				
Delay	140.2			
Level of Service	F			
Intersection Capacity Utilization	88.6%	ICU Level of Service	E	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	1281	148	432	1101	69	189	492	442	130	226	56
Future Volume (vph)	140	1281	148	432	1101	69	189	492	442	130	226	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1863	1583	1770	1863	1583	1770	1807	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.36	1.00	1.00	0.13	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1863	1583	670	1863	1583	248	1807	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	144	1321	153	445	1135	71	195	507	456	134	233	58
RTOR Reduction (vph)	0	0	77	0	0	28	0	0	292	0	8	0
Lane Group Flow (vph)	144	1321	76	445	1135	43	195	507	164	134	283	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2			6	8		8	4		
Actuated Green, G (s)	14.5	45.0	45.0	25.0	55.5	55.5	30.0	30.0	30.0	30.0	30.0	
Effective Green, g (s)	14.5	45.0	45.0	25.0	55.5	55.5	30.0	30.0	30.0	30.0	30.0	
Actuated g/C Ratio	0.13	0.40	0.40	0.22	0.49	0.49	0.26	0.26	0.26	0.26	0.26	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.7	4.7	4.7	4.7	4.7	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	225	1400	626	389	909	772	176	491	417	65	476	
v/s Ratio Prot	0.08	0.37		c0.25	c0.61			0.27			0.16	
v/s Ratio Perm			0.05			0.03	0.29		0.10	c0.54		
v/c Ratio	0.64	0.94	0.12	1.14	1.25	0.06	1.11	1.03	0.39	2.06	0.59	
Uniform Delay, d1	47.1	33.1	21.8	44.4	29.1	15.3	41.9	41.9	34.4	41.9	36.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.1	12.9	0.1	91.0	121.1	0.1	99.7	49.3	0.6	526.5	5.4	
Delay (s)	53.2	46.0	21.9	135.3	150.2	15.4	141.6	91.1	35.0	568.3	41.9	
Level of Service	D	D	C	F	F	B	F	F	C	F	D	
Approach Delay (s)		44.4			140.4			77.5			207.9	
Approach LOS		D			F			E			F	

Intersection Summary			
HCM 2000 Control Delay	99.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.49		
Actuated Cycle Length (s)	113.7	Sum of lost time (s)	13.7
Intersection Capacity Utilization	114.4%	ICU Level of Service	H
Analysis Period (min)	15		

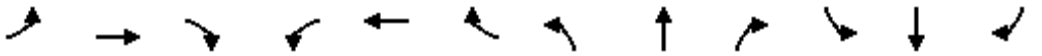
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	404	1695	260	180	1018	158	586	848	465	139	235	152
Future Volume (vph)	404	1695	260	180	1018	158	586	848	465	139	235	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.91	0.91	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	4983		1610	3369	1583	1770	3331	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	0.99	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	4983		1610	3369	1583	1770	3331	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	434	1823	280	194	1095	170	630	912	500	149	253	163
RTOR Reduction (vph)	0	0	77	0	15	0	0	0	233	0	71	0
Lane Group Flow (vph)	434	1823	203	194	1250	0	498	1044	267	149	345	0
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		4	4		3	3	
Permitted Phases			2						4			
Actuated Green, G (s)	25.0	56.1	56.1	20.1	51.2		33.0	33.0	33.0	15.0	15.0	
Effective Green, g (s)	25.0	56.1	56.1	20.1	51.2		33.0	33.0	33.0	15.0	15.0	
Actuated g/C Ratio	0.18	0.39	0.39	0.14	0.36		0.23	0.23	0.23	0.11	0.11	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	311	1396	624	250	1794		373	781	367	186	351	
v/s Ratio Prot	c0.25	c0.52		0.11	0.25		0.31	c0.31		0.08	c0.10	
v/s Ratio Perm			0.13						0.17			
v/c Ratio	1.40	1.31	0.33	0.78	0.70		1.34	1.34	0.73	0.80	0.98	
Uniform Delay, d1	58.6	43.0	29.9	58.9	38.9		54.6	54.6	50.5	62.1	63.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	196.5	142.9	0.3	14.0	1.2		168.1	160.2	7.1	21.4	43.4	
Delay (s)	255.1	186.0	30.2	72.9	40.1		222.7	214.8	57.5	83.5	106.9	
Level of Service	F	F	C	E	D		F	F	E	F	F	
Approach Delay (s)		180.6			44.4			178.2			100.7	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM 2000 Control Delay	142.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	142.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		

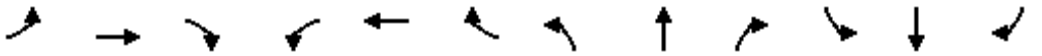
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	1508	240	763	1010	58	874	802	43	33	362	74
Future Volume (vph)	119	1508	240	763	1010	58	874	802	43	33	362	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3466		1770	3539	1583	1770	1849		1770	1815	
Flt Permitted	0.22	1.00		0.08	1.00	1.00	0.19	1.00		0.19	1.00	
Satd. Flow (perm)	408	3466		151	3539	1583	347	1849		347	1815	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	1587	253	803	1063	61	920	844	45	35	381	78
RTOR Reduction (vph)	0	16	0	0	0	8	0	2	0	0	10	0
Lane Group Flow (vph)	125	1824	0	803	1063	53	920	887	0	35	449	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Effective Green, g (s)	49.5	49.5		49.5	49.5	49.5	21.5	21.5		21.5	21.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62	0.62	0.27	0.27		0.27	0.27	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	252	2144		93	2189	979	93	496		93	487	
v/s Ratio Prot		0.53			0.30			0.48			0.25	
v/s Ratio Perm	0.31			c5.33		0.03	c2.65			0.10		
v/c Ratio	0.50	0.85		8.63	0.49	0.05	9.89	1.79		0.38	0.92	
Uniform Delay, d1	8.4	12.3		15.2	8.3	6.0	29.2	29.2		23.8	28.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	3.5		3457.2	0.2	0.0	4023.0	362.6		11.2	25.5	
Delay (s)	9.9	15.7		3472.5	8.5	6.0	4052.3	391.9		35.0	54.0	
Level of Service	A	B		F	A	A	F	F		D	D	
Approach Delay (s)		15.4			1451.9			2253.4			52.6	
Approach LOS		B			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	1118.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	8.98		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	178.6%	ICU Level of Service	H
Analysis Period (min)	15		

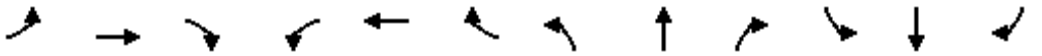
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑↑	↱				↰↰		↱
Traffic Volume (vph)	0	1630	499	0	1795	296	0	0	0	454	0	379
Future Volume (vph)	0	1630	499	0	1795	296	0	0	0	454	0	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Lane Util. Factor		0.91	1.00		0.91	1.00				0.97		1.00
Frt		1.00	0.85		1.00	0.85				1.00		0.85
Flt Protected		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (prot)		5085	1583		5085	1583				3433		1583
Flt Permitted		1.00	1.00		1.00	1.00				0.95		1.00
Satd. Flow (perm)		5085	1583		5085	1583				3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1698	542	0	1870	308	0	0	0	473	0	395
RTOR Reduction (vph)	0	0	201	0	0	86	0	0	0	0	0	15
Lane Group Flow (vph)	0	1698	341	0	1870	222	0	0	0	473	0	380
Turn Type		NA	Perm		NA	Perm				Prot		Perm
Protected Phases		6			2					8		
Permitted Phases			6			2						8
Actuated Green, G (s)		61.9	61.9		61.9	61.9				27.3		27.3
Effective Green, g (s)		61.9	61.9		61.9	61.9				27.3		27.3
Actuated g/C Ratio		0.63	0.63		0.63	0.63				0.28		0.28
Clearance Time (s)		4.9	4.9		4.9	4.9				4.2		4.2
Vehicle Extension (s)		3.0	3.0		3.0	3.0				3.0		3.0
Lane Grp Cap (vph)		3202	996		3202	996				953		439
v/s Ratio Prot		0.33			c0.37					0.14		
v/s Ratio Perm			0.22			0.14						c0.24
v/c Ratio		0.53	0.34		0.58	0.22				0.50		0.87
Uniform Delay, d1		10.1	8.6		10.7	7.8				29.7		33.8
Progression Factor		1.00	1.00		1.00	1.00				1.00		1.00
Incremental Delay, d2		0.6	0.9		0.3	0.1				1.8		19.8
Delay (s)		10.8	9.5		10.9	8.0				31.6		53.6
Level of Service		B	A		B	A				C		D
Approach Delay (s)		10.5			10.5			0.0			41.6	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	98.3	Sum of lost time (s)	9.1
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

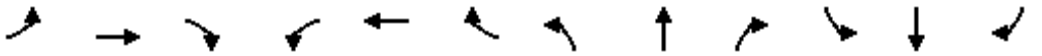
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1630	499	296	1795	0	0	0	0	454	0	379
Future Volume (vph)	0	1630	499	296	1795	0	0	0	0	454	0	379
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Lane Util. Factor		0.95	1.00	1.00	0.91					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3539	1583	1770	5085					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		3539	1583	1770	5085					3433		1583
Peak-hour factor, PHF	0.96	0.96	0.92	0.92	0.96	0.96	0.92	0.92	0.92	0.96	0.92	0.96
Adj. Flow (vph)	0	1698	542	322	1870	0	0	0	0	473	0	395
RTOR Reduction (vph)	0	0	219	0	0	0	0	0	0	0	0	47
Lane Group Flow (vph)	0	1698	323	322	1870	0	0	0	0	473	0	348
Turn Type		NA	Perm	Prot	NA					Prot		Perm
Protected Phases		6		5	2					8		
Permitted Phases			6									8
Actuated Green, G (s)		40.5	40.5	22.3	67.3					29.2		29.2
Effective Green, g (s)		40.5	40.5	22.3	67.3					29.2		29.2
Actuated g/C Ratio		0.38	0.38	0.21	0.64					0.28		0.28
Clearance Time (s)		4.9	4.9	4.5	4.9					4.2		4.2
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		1357	607	373	3240					949		437
v/s Ratio Prot		c0.48		c0.18	0.37					0.14		
v/s Ratio Perm			0.20									c0.22
v/c Ratio		1.25	0.53	0.86	0.58					0.50		0.80
Uniform Delay, d1		32.5	25.2	40.2	11.0					32.1		35.4
Progression Factor		1.00	1.00	1.00	1.00					1.00		1.00
Incremental Delay, d2		119.3	3.3	18.2	0.3					1.9		14.0
Delay (s)		151.9	28.5	58.4	11.2					33.9		49.4
Level of Service		F	C	E	B					C		D
Approach Delay (s)		122.0			18.2			0.0			41.0	
Approach LOS		F			B			A			D	

Intersection Summary			
HCM 2000 Control Delay	65.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	105.6	Sum of lost time (s)	13.6
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1216	925	0	0	1147	803	129	557	119	622	0	1136
Future Volume (vph)	1216	925	0	0	1147	803	129	557	119	622	0	1136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		4.9
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	1.00	1.00		0.88
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5085	1583	1681	1768	1583	1770		2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.92	0.98	0.98	0.98	0.98
Adj. Flow (vph)	1241	944	0	0	1170	819	132	605	121	635	0	1159
RTOR Reduction (vph)	0	0	0	0	0	231	0	0	64	0	0	547
Lane Group Flow (vph)	1241	944	0	0	1170	588	119	618	57	635	0	612
Turn Type	Prot	NA	Perm		NA	Perm	Split	NA	Perm	Prot		pt+ov
Protected Phases	5	2			6		8	8		7		7 5
Permitted Phases			2			6			8			
Actuated Green, G (s)	21.3	49.2			23.2	23.2	47.7	47.7	47.7	17.7		43.9
Effective Green, g (s)	21.3	49.2			23.2	23.2	47.7	47.7	47.7	17.7		43.9
Actuated g/C Ratio	0.16	0.38			0.18	0.18	0.37	0.37	0.37	0.14		0.34
Clearance Time (s)	4.7	5.4			5.4	5.4	5.1	5.1	5.1	4.9		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	562	1339			907	282	616	648	580	240		941
v/s Ratio Prot	c0.36	0.27			0.23		0.07	c0.35		c0.36		0.22
v/s Ratio Perm						c0.37			0.04			
v/c Ratio	2.21	0.71			1.29	2.09	0.19	0.95	0.10	2.65		0.65
Uniform Delay, d1	54.4	34.2			53.4	53.4	28.0	40.1	27.0	56.1		36.5
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	549.5	3.1			138.8	500.5	0.2	24.3	0.1	752.5		1.6
Delay (s)	603.8	37.4			192.2	553.9	28.2	64.4	27.1	808.6		38.2
Level of Service	F	D			F	F	C	E	C	F		D
Approach Delay (s)		359.1			341.1			54.1			310.9	
Approach LOS		F			F			D			F	

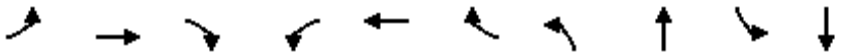
Intersection Summary			
HCM 2000 Control Delay	302.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.70		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	136.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	71	22	0	48	20	0
Future Volume (Veh/h)	71	22	0	48	20	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	77	24	0	52	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	588					
pX, platoon unblocked						
vC, conflicting volume			101		141	89
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			101		141	89
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1491		852	969

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	101	52	22
Volume Left	0	0	22
Volume Right	24	0	0
cSH	1700	1700	852
Volume to Capacity	0.06	0.03	0.03
Queue Length 95th (ft)	0	0	2
Control Delay (s)	0.0	0.0	9.3
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.3
Approach LOS			A

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

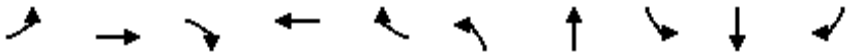


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	540	369	615	225	261	89	488	2943	190	2418
v/c Ratio	0.87	0.53	1.08	0.62	0.61	0.33	1.46	1.55	0.57	1.27
Control Delay	67.8	51.1	84.1	64.3	61.8	13.6	259.1	278.8	56.7	161.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.8	51.1	84.1	64.3	61.8	13.6	259.1	278.8	56.7	161.2
Queue Length 50th (ft)	231	150	~347	96	114	0	~570	~1304	149	~956
Queue Length 95th (ft)	#326	207	#583	139	158	49	#812	#1438	237	#1089
Internal Link Dist (ft)		307			177			652		291
Turn Bay Length (ft)	100			240			530		500	
Base Capacity (vph)	651	695	571	651	671	372	335	1904	335	1903
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.53	1.08	0.35	0.39	0.24	1.46	1.55	0.57	1.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	533	18	443	45	23	588	2362	73	1860	528
v/c Ratio	0.92	0.06	0.73	0.40	0.13	0.87	0.78	0.52	0.79	0.57
Control Delay	79.9	50.2	14.4	74.0	1.5	70.0	26.5	75.3	36.9	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.9	50.2	14.4	74.0	1.5	70.0	26.5	75.3	36.9	10.8
Queue Length 50th (ft)	253	14	24	41	0	270	630	66	556	96
Queue Length 95th (ft)	#357	38	144	83	0	#348	776	117	634	217
Internal Link Dist (ft)		523		508			721		258	
Turn Bay Length (ft)	470				315	510		235		
Base Capacity (vph)	580	314	610	142	201	708	3016	361	2343	930
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.06	0.73	0.32	0.11	0.83	0.78	0.20	0.79	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	111	36	27	120	3128	34	2411
v/c Ratio	0.72	0.67	0.16	0.78	1.07	0.42	0.91
Control Delay	50.7	111.6	2.0	91.5	52.5	78.4	19.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.7	111.6	2.0	91.5	52.5	78.4	19.0
Queue Length 50th (ft)	34	31	0	103	~1626	29	753
Queue Length 95th (ft)	#122	#89	0	#203	#1740	67	909
Internal Link Dist (ft)	243	108			381		226
Turn Bay Length (ft)				225		70	
Base Capacity (vph)	158	56	173	160	2927	80	2664
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.70	0.64	0.16	0.75	1.07	0.42	0.91

Intersection Summary

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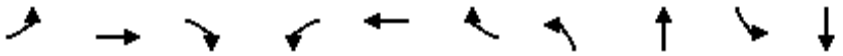
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	732	613	416	14	151	149	642	2357	157	2242
v/c Ratio	1.12	0.56	0.64	0.22	0.50	0.36	1.07	0.92	0.93	1.06
Control Delay	123.3	20.0	13.4	73.4	65.4	16.7	108.3	38.5	115.1	74.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	123.3	20.0	13.4	73.4	65.4	16.7	108.3	38.5	115.1	74.3
Queue Length 50th (ft)	~382	103	50	12	68	29	~321	683	140	~782
Queue Length 95th (ft)	#539	181	189	38	106	91	#471	#838	#295	#939
Internal Link Dist (ft)		441			133			497		366
Turn Bay Length (ft)	200		110				290		215	
Base Capacity (vph)	653	1254	714	64	647	417	602	2565	168	2119
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.49	0.58	0.22	0.23	0.36	1.07	0.92	0.93	1.06

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBT	EBR	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	264	457	86	436	3014	32	2000
v/c Ratio	0.89	0.67	0.36	0.65	1.03	0.11	1.02
Control Delay	62.1	9.4	24.9	32.3	45.4	28.1	50.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	9.4	24.9	32.3	45.4	28.1	50.9
Queue Length 50th (ft)	118	11	26	96	379	13	~373
Queue Length 95th (ft)	#247	93	66	134	#787	36	#512
Internal Link Dist (ft)	179		129		413		328
Turn Bay Length (ft)				410		290	
Base Capacity (vph)	306	688	246	826	2920	378	1961
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.66	0.35	0.53	1.03	0.08	1.02

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

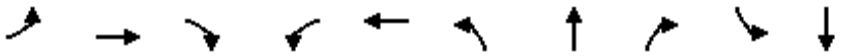
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	144	1321	153	445	1135	71	195	507	456	134	291
v/c Ratio	0.64	0.94	0.22	1.14	1.25	0.09	1.10	1.03	0.64	2.06	0.60
Control Delay	59.3	47.5	6.6	131.7	149.6	6.9	138.0	90.9	10.6	551.4	41.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.3	47.5	6.6	131.7	149.6	6.9	138.0	90.9	10.6	551.4	41.2
Queue Length 50th (ft)	102	483	12	~382	~1037	6	~162	~398	33	~154	180
Queue Length 95th (ft)	161	#634	53	#581	#1360	33	#310	#607	139	#281	273
Internal Link Dist (ft)		301			309			250			219
Turn Bay Length (ft)	170			190						100	
Base Capacity (vph)	389	1400	703	389	909	800	177	491	709	65	484
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.94	0.22	1.14	1.25	0.09	1.10	1.03	0.64	2.06	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	434	1823	280	194	1265	498	1044	500	149	416
v/c Ratio	1.40	1.31	0.40	0.78	0.70	1.33	1.34	0.83	0.80	0.99
Control Delay	238.6	179.5	18.6	79.9	40.5	209.0	201.0	33.5	91.9	91.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	2.6	1.7	8.3	0.0	0.0
Total Delay	238.6	179.5	18.6	79.9	40.5	211.6	202.7	41.8	91.9	91.3
Queue Length 50th (ft)	~538	~1145	98	176	359	~661	~693	189	138	169
Queue Length 95th (ft)	#782	#1338	184	263	413	#941	#870	#394	#264	#296
Internal Link Dist (ft)		477			503		264			516
Turn Bay Length (ft)	250			245					155	
Base Capacity (vph)	311	1395	700	311	1978	374	782	600	186	422
Starvation Cap Reductn	0	0	0	0	0	78	181	74	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.40	1.31	0.40	0.62	0.64	1.68	1.74	0.95	0.80	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

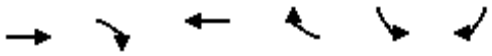
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	125	1840	803	1063	61	920	889	35	459
v/c Ratio	0.50	0.85	8.63	0.49	0.06	10.00	1.79	0.38	0.92
Control Delay	16.8	17.1	3463.6	9.2	4.7	4077.3	385.2	37.8	55.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	17.1	3463.6	9.2	4.7	4077.3	385.2	37.8	55.1
Queue Length 50th (ft)	31	342	~771	136	7	~903	~685	14	217
Queue Length 95th (ft)	84	456	#988	180	21	#1131	#909	44	#397
Internal Link Dist (ft)		226		183			141		249
Turn Bay Length (ft)			253					125	
Base Capacity (vph)	252	2159	93	2189	987	92	498	92	497
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.85	8.63	0.49	0.06	10.00	1.79	0.38	0.92

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

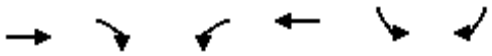
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	1698	542	1870	308	473	395
v/c Ratio	0.53	0.45	0.58	0.28	0.50	0.87
Control Delay	10.9	2.0	11.6	2.9	31.9	53.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	2.0	11.6	2.9	31.9	53.1
Queue Length 50th (ft)	197	0	228	17	127	224
Queue Length 95th (ft)	234	36	270	50	176	#394
Internal Link Dist (ft)	179		254			
Turn Bay Length (ft)				105		
Base Capacity (vph)	3202	1197	3202	1082	953	454
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.45	0.58	0.28	0.50	0.87

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBT	EBR	WBL	WBT	SBL	SBR
Lane Group Flow (vph)	1698	542	322	1870	473	395
v/c Ratio	1.25	0.66	0.86	0.58	0.50	0.81
Control Delay	150.8	13.2	62.8	11.8	34.6	45.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	150.8	13.2	62.8	11.8	34.6	45.1
Queue Length 50th (ft)	~785	98	211	242	142	218
Queue Length 95th (ft)	#924	223	#349	283	193	#381
Internal Link Dist (ft)	347			254		
Turn Bay Length (ft)					200	
Base Capacity (vph)	1354	825	412	3349	949	485
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.25	0.66	0.78	0.56	0.50	0.81

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	1241	944	1170	819	119	618	121	635	1159
v/c Ratio	2.21	0.71	1.29	1.60	0.19	0.95	0.19	2.65	0.78
Control Delay	575.5	37.7	181.3	301.0	28.6	65.7	7.8	772.6	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	575.5	37.7	181.3	301.0	28.6	65.7	7.8	772.6	14.8
Queue Length 50th (ft)	~865	352	~459	~784	70	522	11	~915	150
Queue Length 95th (ft)	#1001	430	#554	#1035	118	#769	52	#1148	256
Internal Link Dist (ft)		226	177			129			
Turn Bay Length (ft)	200			210	340				
Base Capacity (vph)	562	1339	907	513	632	665	658	240	1485
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.21	0.71	1.29	1.60	0.19	0.93	0.18	2.65	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

APPENDIX G

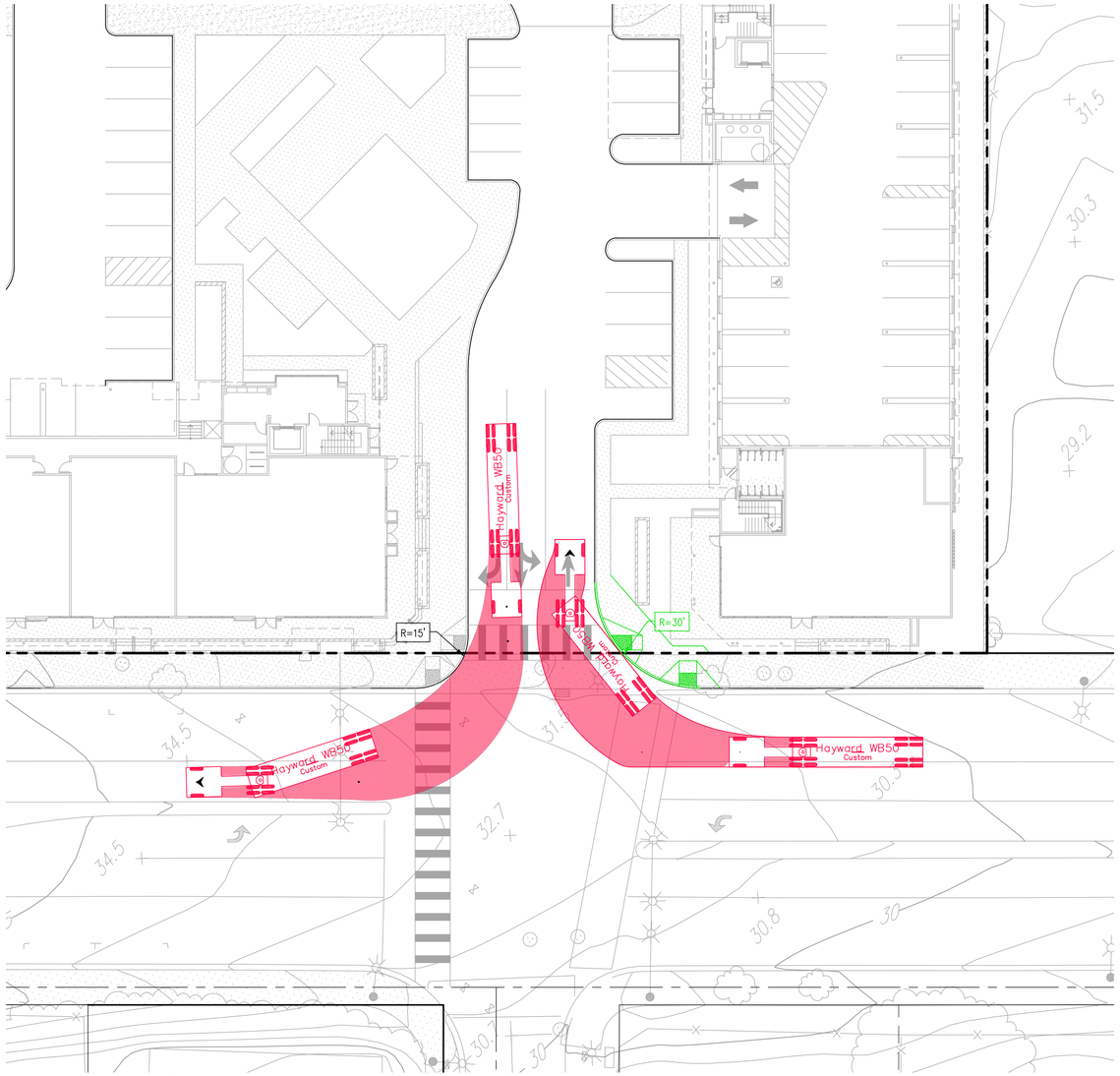
SELECT ZONE DISTRIBUTION PLOT

ATTACHMENT VI

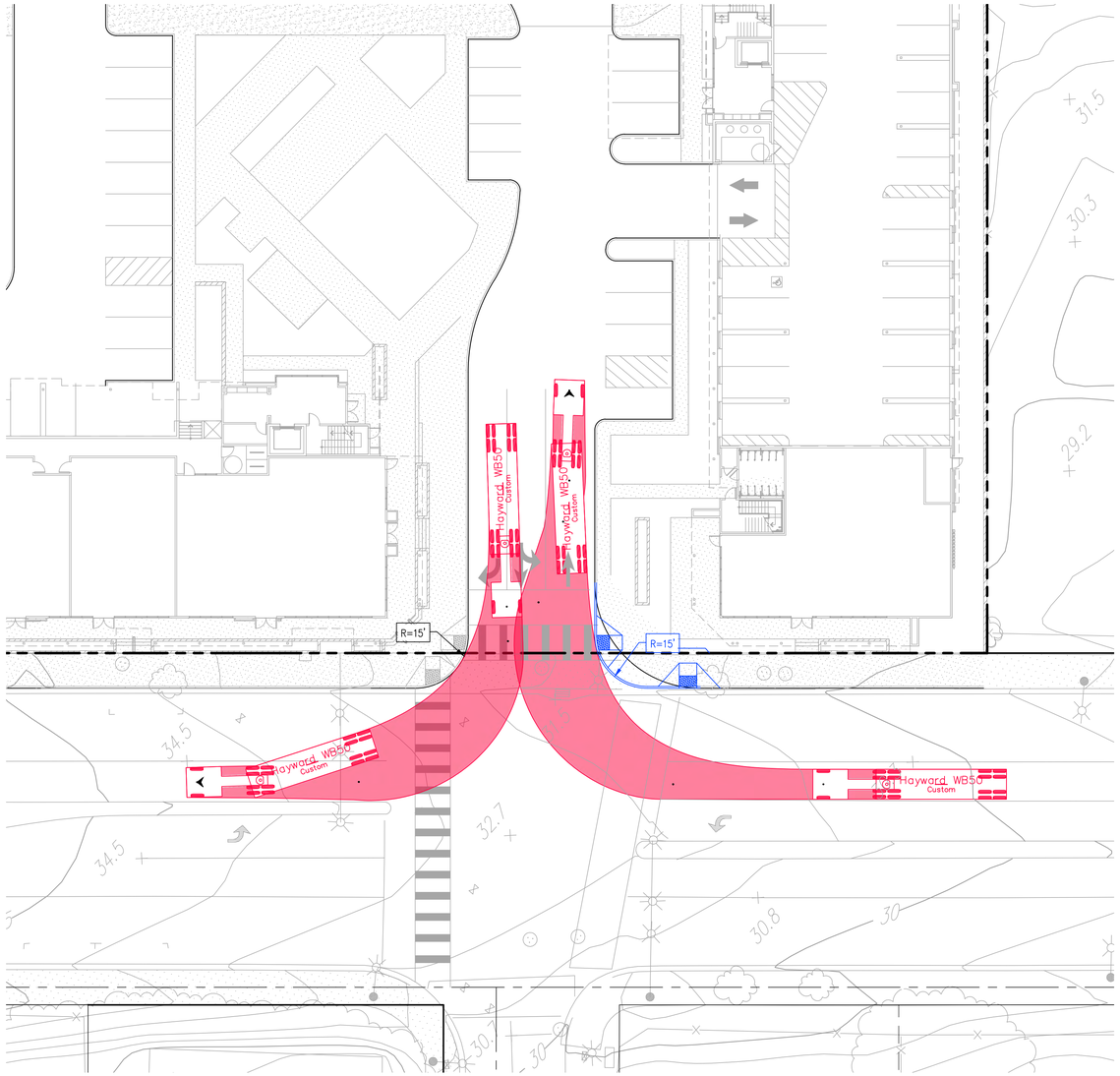
HAY1701.06 Select Zone - PM Peak Hour (2035)

APPENDIX H

TRUCK TURNING TEMPLATES



30' IN-BOUND TURNING RADIUS



15' IN-BOUND TURNING RADIUS

ENTRY ROAD
FIRE ACCESS EXHIBIT
29212 MISSION BOULEVARD

CITY OF HAYWARD ALAMEDA COUNTY CALIFORNIA

0' 20' 60' 80'

SCALE: 1" = 20'

DATE: JULY 2019

cbg
CIVIL ENGINEERS ▪ SURVEYORS ▪ PLANNERS
SAN RAMON ▪ (925) 866-0322
SACRAMENTO ▪ (916) 375-1877
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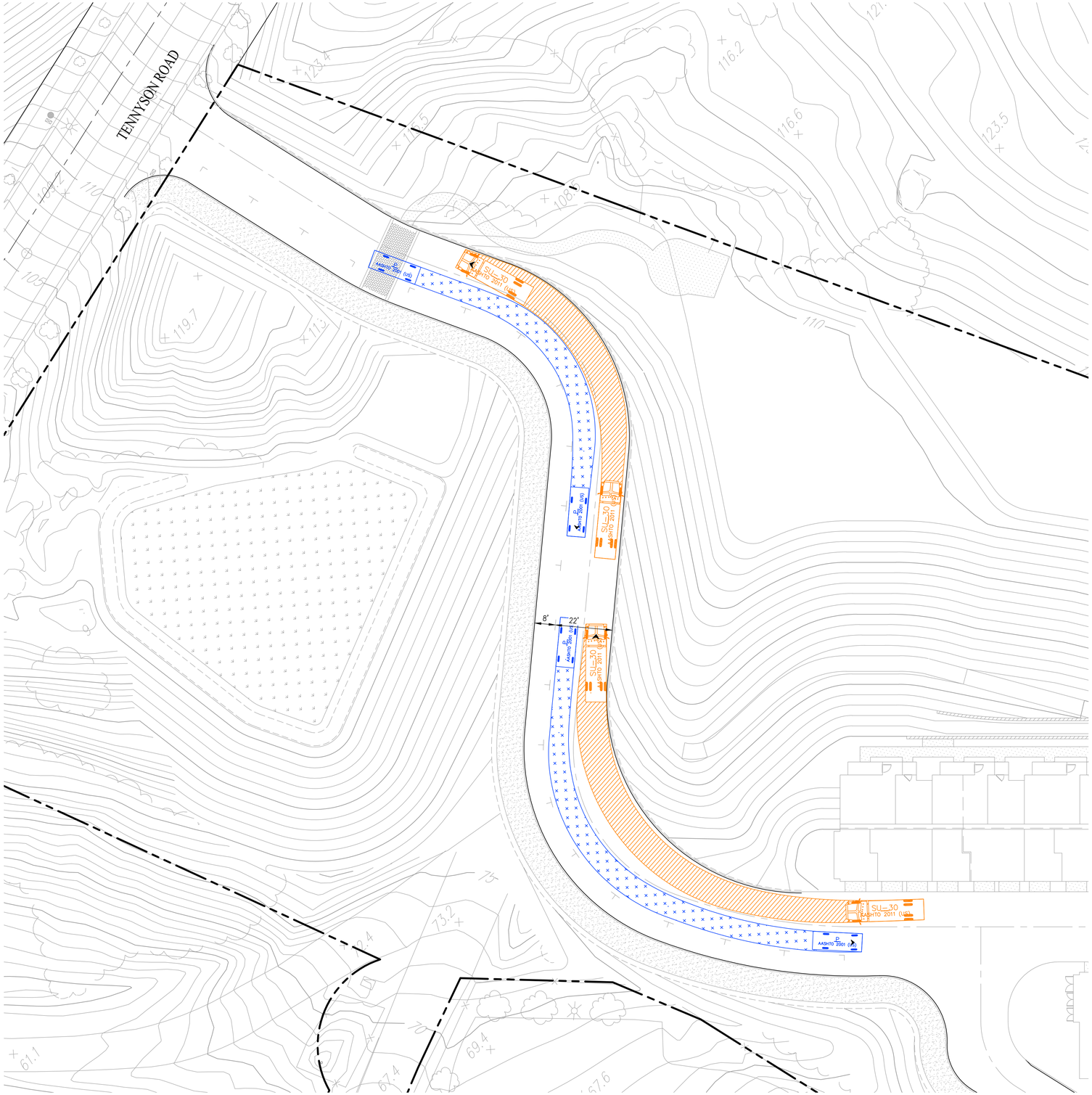
7/8/2019 8:13 AM

F:\2775-000\ACAD\EXHIBITS\ENTRYTURNING RADIUS EXHIBIT.DWG



TENNYSON ACCESS ROAD
CIRCULATION EXHIBIT
29212 MISSION BOULEVARD

CITY OF HAYWARD ALAMEDA COUNTY CALIFORNIA

0' 20' 60' 80'

SCALE: 1" = 20'

DATE: JULY 2019

cbg
CIVIL ENGINEERS ▪ SURVEYORS ▪ PLANNERS
SAN RAMON ▪ (925) 866-0322
SACRAMENTO ▪ (916) 375-1877
WWW.CBANDG.COM

7/8/2019 8:10 AM

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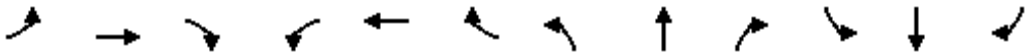
APPENDIX I

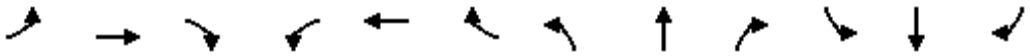
RECOMMENDED IMPROVEMENT LEVEL OF SERVICE CALCULATION WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	933	237	958	1244	33	512	196	89	44	694	113
Future Volume (vph)	53	933	237	958	1244	33	512	196	89	44	694	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3432		1770	3539	1583	1770	1775		1770	1824	
Flt Permitted	0.22	1.00		0.22	1.00	1.00	0.22	1.00		0.55	1.00	
Satd. Flow (perm)	414	3432		414	3539	1583	414	1775		1021	1824	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	56	982	249	1008	1309	35	539	206	94	46	731	119
RTOR Reduction (vph)	0	50	0	0	0	21	0	24	0	0	7	0
Lane Group Flow (vph)	56	1181	0	1008	1309	14	539	276	0	46	843	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Effective Green, g (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40	0.40	0.40	0.40		0.40	0.40	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	1372		165	1415	633	165	710		408	729	
v/s Ratio Prot		0.34			0.37			0.16			0.46	
v/s Ratio Perm	0.14			c2.44		0.01	c1.30			0.05		
v/c Ratio	0.34	0.86		6.11	0.93	0.02	3.27	0.39		0.11	1.16	
Uniform Delay, d1	9.4	12.4		13.5	12.9	8.2	13.5	9.6		8.5	13.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	5.8		2312.1	10.5	0.0	1035.5	1.6		0.6	85.3	
Delay (s)	10.6	18.1		2325.6	23.3	8.2	1049.0	11.2		9.0	98.8	
Level of Service	B	B		F	C	A	F	B		A	F	
Approach Delay (s)		17.8			1009.8			677.9			94.2	
Approach LOS		B			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	567.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	4.67		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	173.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	1508	240	763	1010	58	874	802	43	33	362	74
Future Volume (vph)	119	1508	240	763	1010	58	874	802	43	33	362	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3466		1770	3539	1583	1770	1849		1770	1815	
Flt Permitted	0.22	1.00		0.22	1.00	1.00	0.37	1.00		0.22	1.00	
Satd. Flow (perm)	414	3466		414	3539	1583	684	1849		414	1815	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	1587	253	803	1063	61	920	844	45	35	381	78
RTOR Reduction (vph)	0	28	0	0	0	37	0	2	0	0	16	0
Lane Group Flow (vph)	125	1812	0	803	1063	24	920	887	0	35	443	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Effective Green, g (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40	0.40	0.40	0.40		0.40	0.40	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	165	1386		165	1415	633	273	739		165	726	
v/s Ratio Prot		0.52			0.30			0.48			0.24	
v/s Ratio Perm	0.30			c1.94		0.02	c1.34			0.08		
v/c Ratio	0.76	1.31		4.87	0.75	0.04	3.37	1.20		0.21	0.61	
Uniform Delay, d1	11.6	13.5		13.5	11.6	8.2	13.5	13.5		8.9	10.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.9	143.6		1753.6	2.3	0.0	1075.8	102.7		2.9	3.8	
Delay (s)	29.5	157.1		1767.1	13.9	8.3	1089.3	116.2		11.8	14.5	
Level of Service	C	F		F	B	A	F	F		B	B	
Approach Delay (s)		149.0			744.3			611.1			14.3	
Approach LOS		F			F			F			B	

Intersection Summary			
HCM 2000 Control Delay	458.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	4.11		
Actuated Cycle Length (s)	45.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	178.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group