ATTACHMENT E

Traffic Impact Study Report

Draft Traffic Impact Study Report

Castro Valley Medical Office Building

Alameda County, California

April 5, 2019

TJKM

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EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed 25,000 square foot (sq. ft.) medical office building to be located at 20630 and 20642 John Drive in Castro Valley, California. This analysis evaluated intersection level of service, as well as project site access, on-site circulation, pedestrian and bicycle access, and parking.

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, four study intersections were evaluated during the weekday a.m. peak hour, p.m. school peak hour, and p.m. peak hour, under four study scenarios. The study intersections were evaluated under Existing, Existing plus Project, Cumulative, and Cumulative plus Project scenarios.

Project Trip Generation

The proposed medical office development is expected to generate 870 net new daily trips, including 59 a.m. peak hour trips (50 in, nine out) and 63 p.m. peak hour trips (18 in, 45 out).

Existing Conditions

Under Existing Conditions, all study intersections operate at acceptable LOS D or better during all peak periods.

Existing plus Project Conditions

Under this scenario, all intersections would continue to operate at acceptable LOS D or better during all peak periods. The project does not produce any queue overflows in dedicated turn lanes. The project is expected to produce **a less-than-significant impact** at all study intersections under Existing plus Project Conditions.

Cumulative Conditions

Under this scenario, medical office development is expected to generate 870 net new daily trips, including 59 a.m. peak hour trips (50 in, nine out) and 63 p.m. peak hour trips (18 in, 45 out).

Cumulative plus Project Conditions

Under this scenario, the project entrance and the intersection of Castro Valley Boulevard & John Drive/Strobridge Avenue would operate at acceptable LOS D or better during both peak periods. The remaining study intersections would operate at unacceptable LOS E or F during both peak hours. The unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp would experience a potentially significant impact, which could be mitigated with signalization. With mitigation, the project is expected to produce **a less-than-significant impact** at all study intersections under Cumulative plus Project Conditions.

Site Access, Circulation, and Parking

The project site would be accessed via one 26-foot driveway on John Drive. The parking lot features 24-foot drive aisles and right-angle parking. The project would provide **adequate** access and on-site circulation for vehicles, and adequate access for emergency vehicles and garbage trucks. The project

would provide 98 parking spaces, which meets both the County requirement of 90 parking spaces and the estimated ITE parking demand of 81 parking spaces. The project is expected to produce a **less than significant impact** either on-site or on public streets.

Pedestrian, Bicycle, and Transit Access

The project would be accessed via existing sidewalks along the project frontage and in the project vicinity, and via existing bicycle facilities on John Drive and Castro Valley Boulevard. A continuous accessible path would be provided between the sidewalk and the project entrance. Although there are bus stops close to the project site, the project has limited usable transit access. Site access for pedestrians and bicycles would be **adequate**, and the project would produce a **less-than-significant impact** on existing pedestrian, bicycle, and transit facilities.

1.0 INTRODUCTION

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed medical office building to be located at 20630 and 20642 John Drive in Castro Valley, California. The purpose of this study is to evaluate the potential traffic impacts resulting from the development of the proposed project on the surrounding transportation system. The proposed project would replace the existing uses and construct a 25,000 square foot (sq. ft.) medical office building. This chapter discusses the TIS purpose, project study area, analysis scenarios and levels of service methodology, and criteria used to identify significant impacts.

1.1 Study Intersections, Segments, and Scenarios

TJKM evaluated traffic conditions at five study intersections during the a.m. p.m. peak periods. The study intersections were selected in consultation with Alameda County staff. The 7:00-9:00 a.m. peak period corresponds with peak morning commute traffic. The 4:00-6:00 p.m. peak period corresponds with peak afternoon commute traffic. The highest single one-hour periods recorded for each peak period are used in the analysis. The study intersections and associated traffic controls are as follows:

- John Drive & Project Driveway (one-way stop control)
- Castro Valley Boulevard & John Drive/Strobridge Avenue (signal)
- Castro Valley Boulevard & Stanton Avenue (signal)
- Strobridge Avenue/Stanton Avenue & I-580 WB Off-Ramp (one-way stop control)
- Strobridge Avenue & I-580 EB Ramps/Gary Drive (signal)

Figure 1 illustrates the study intersections, and the vicinity map of the proposed project. **Figure 2** shows the proposed project site plan dated February 4, 2019.

This study addresses the following four traffic scenarios:

1. **Existing Conditions** – This scenario evaluates all the study locations based on existing traffic volumes, lane geometry and traffic controls.
2. **Existing plus Project Conditions** – This scenario is similar to Existing Conditions, but with the addition of traffic from the proposed project.
3. **Cumulative Conditions** – This scenario evaluates projected traffic in the project vicinity in the year 2035, based on an annual growth rate of two percent applied to Existing Conditions.
4. **Cumulative plus Project Conditions –** This scenario is identical to Cumulative Conditions, but with the addition of traffic from the proposed project

Figure 1: Vicinity Map

LEGEND

X Study Intersection

Project Site

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Figure 2: Site Plan

2.0 STUDY METHODOLOGY

This section describes the methods used to determine the traffic conditions for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

2.1 Level of Service Analysis Methodology

Level of Service (LOS) is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed, travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow with minimal delays) and F the worst (severely congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets in urban areas.

Signalized Intersections

The study intersections under traffic signal control were analyzed using the 2000 Highway Capacity Manual (HCM) Operations Methodology for signalized intersections described in Chapter 16 (HCM 2000). TJKM utilized HCM 2000 methodology as the newer HCM 2010 and HCM 6th edition are unable to evaluate level of service for certain lane geometries and signal phasing. This methodology determines LOS based on average control delay per vehicle for the overall intersection during peak hour intersection operating conditions. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections was calculated using Synchro 10 analysis software and was correlated to a LOS designation as shown in **Table 1**.

Table 1: Signalized Intersection Delay and LOS Definitions

Level of Service	Description	Average Control Delay
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major-contributing causes of such delay levels.	greater than 80.0

Source: Highway Capacity Manual 2000
Average Control Delay per vehicle in seconds

Unsignalized Intersections

The study intersections were analyzed using the 2000 HCM Operations Methodology for unsignalized intersections described in Chapter 17 (HCM 2000). LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At side street and two-way stop controlled intersections, the control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The weighted average delay for the entire intersection is presented for all-way stop controlled intersections. **Table 2** summarizes the relationship between delay and LOS for unsignalized intersections. The delay ranges for unsignalized intersections are lower than for signalized intersections as drivers expect less delay at unsignalized intersections.

Table 2: Level of Service Definitions for Stop-Controlled Intersections

Level of Service	Description
A	Very low control delay less than 10 seconds per vehicle for each movement subject to delay.
B	Low control delay greater than 10 and up to 15 seconds per vehicle for each movement subject to delay.
C	Acceptable control delay greater than 15 and up to 25 seconds per vehicle for each movement subject to delay.
D	Tolerable control delay greater than 25 and up to 35 seconds per vehicle for each movement subject to delay.
E	Limit of tolerable control delay greater than 35 and up to 50 seconds per vehicle for each movement subject to delay.
F	Unacceptable control delay in excess of 50 seconds per vehicle, for each movement subject to delay.

Source: Highway Capacity Manual 2000

2.2 Significant Impact Criteria and Level of Service Standards

The transportation impact analysis assesses how the study area's transportation system would operate with the implementation of the proposed project. The potential impacts were identified by applying a set of significance criteria based on the California Environmental Quality Act (CEQA) guidelines and set forth by Alameda County.

The 2012 Castro Valley General Plan identifies level of service (LOS) E to be acceptable for Congestion Management Program (CMP) roadways, including Castro Valley Boulevard. On non-CMP roadways, the level of service standard is LOS D. Based on the General Plan criteria, any study segment or intersection will be considered potentially impacted if service level exceeds LOS D under the Existing plus Project scenario. The Castro Valley General Plan and Alameda County Transportation Commission do not have established significance thresholds for facilities already operating at unacceptable level of service. For the purpose of this study, TJKM has applied the following criteria, based on the Environmental Impact Report (EIR) for the General Plan:

A project is considered to have a significant impact if one or more of the following conditions occur:

1. Development would discourage or interfere with transit, bicycle, or pedestrian circulation.
2. Level of Service (LOS) exceeds the conditions expected under the No Project baseline by a full letter grade and:
    a. Peak hour level of service drops below acceptable LOS E or F, as specified in the General Plan.
3. When LOS under the No Project baseline condition is already below standard for peak hours and:
    a. The proposed project causes the average delay per vehicle at an intersection to exceed that of the No Project condition by five seconds or more.

3.0 EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersection, including the results of LOS calculations.

3.1 Existing Setting and Roadway System

Important roadways adjacent to the project site are discussed below:

Interstate 580 (I-580) is a six to ten lane, generally east-west freeway, with three to five mixed flow lanes in each direction. The speed limit on I-580 is 65 miles per hour (mph).

Interstate 238 (I-238) is a six to eight lane, east-west freeway, with three to four mixed flow lanes in each direction. Southeast of the interchange with I-580, I-238 continues as Foothill Boulevard. The speed limit on I-580 is 65 mph.

Foothill Boulevard is a six lane, north-south. divided arterial roadway in the project vicinity. The speed limit in the project vicinity is 35 mph.

Castro Valley Boulevard is a four to six lane, generally east-west, divided roadway that runs through the Castro Valley central business district. The Castro Valley General Plan designates Castro Valley boulevard as an arterial road. West of the I-580/I-238 interchange, Castro Valley Boulevard becomes Mattox Road. The speed limit on Castro Valley Boulevard is 30 mph.

John Drive is a four lane, generally east-west local road that connects with Castro Valley Boulevard and provides direct access to the project site. West of the project site, John Drive changes designation to Foothill Boulevard, turns northward, and becomes a frontage road for I-580. Immediately southeast of the project site, John Drive turns south and becomes Strobridge Avenue. The speed limit on John Drive is 30 mph.

Stanton Avenue is a two to four lane, north-south collector in the project vicinity. Between Strobridge Avenue and Castro Valley Boulevard, Stanton Avenue is a one-way road carrying northbound traffic. The speed limit on Stanton Avenue is 30 mph.

Strobridge Avenue is a generally two lane, north-south collector in the project vicinity, which becomes John Drive north of Castro Valley. Between Castro Valley Boulevard and Stanton Avenue, Strobridge Avenue is a one-way road carrying southbound traffic. South of I-580, Stanton Avenue turns east and becomes a frontage road along the south side of I-580. Currently, southbound Strobridge Avenue is closed at the intersection with Gary Drive and I-580 eastbound ramps. The speed limit on Strobridge Avenue is 30 mph.

3.2 Existing Pedestrian Facilities

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal "walkable" community includes wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, and easy access to transit facilities and services. Pedestrian

facilities consist of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities.

In the project vicinity, the two study intersections on Castro Valley Boulevard and the intersection of Strobridge Avenue & I-580 EB Ramps/Gary Drive are signalized. The intersection of Strobridge Avenue/Stanton Avenue & I-580 WB Off-Ramp is stop controlled on the off-ramp approach. All include crosswalks, although not all existing curb cuts meet current standards under the Americans with Disabilities Act. North of Castro Valley Boulevard, sidewalks are intermittent or of poor quality on multiple blocks. There is adequate street lighting in the vicinity. The existing pedestrian facilities in the immediate project vicinity are shown in **Figure 3.** Existing peak hour pedestrian counts are provided in **Appendix A.**

3.3 Existing Bicycle Facilities

Bicycle facilities include the following:

- Bike Paths (Class I) – Paved trails that are separated from roadways
- Bike Lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs
- Bike Routes (Class III) – Designated roadways for bicycle use by signs or other markings which may or may not include additional pavement width for cyclists

Castro Valley Boulevard features a bike lane on the north (westbound) side, west of Stanton Avenue. The corresponding eastbound bike lane ends at Foothill Boulevard, at the western portion of the freeway interchange. Bike lanes are also provided on John Drive/Foothill Boulevard, north of Castro Valley Boulevard. The Alameda County Bicycle and Pedestrian Master Plan (2012) proposes bike lanes along both sides of Castro Valley Boulevard and Lake Chabot Road in the project vicinity, and a designated rideway on Stanton Avenue. Southeast of the project vicinity, Norbridge Avenue provides a direct route to the Castro Valley BART station, with bike lanes along much of its length.

Although existing bicycle facilities are limited, there are adequate signage and markings for the bicyclists to maneuver without confusion. Overall, existing bicycle facilities provide adequate connectivity between the proposed project site and the adjacent residential neighborhoods and transit connections.

The existing bicycle facilities in the study area are shown in **Figure 3.** Existing peak hour bicycle counts are provided in **Appendix A**.

3.4 Existing Transit Facilities

Bus service in the project vicinity is provided by AC Transit. Route NX4 runs between the Castro Valley Park & Ride lot near the project site and the Transbay Terminal in San Francisco. The nearest bus stops are on Castro Valley Boulevard and John Drive, within 400 feet of the project site. Route NX4 runs six westbound trips during the morning peak period and nine eastbound trips during the afternoon peak period. **Table 3** summarizes this service and frequency.

Table 3: Existing Bus Services

Route	Direction	From	To	Operating Hours	Headway (minutes)
NX4	Westbound	Castro Valley Park & Ride	Transbay Temporary Terminal	5:30 a.m. – 9:22 a.m.	30-40
NX4	Eastbound	Transbay Temporary Terminal	Castro Valley Park & Ride	3:45 p.m. – 8:27 p.m.	15 peak (4:45 p.m. – 5:45 p.m.)/ 40-60 off-peak

Source: http://www.actransit.org

Figure 3: Existing Pedestrian, Bicycle, and Transit Facilities

LEGEND

- Project Site
- X — Study Intersection
- Sidewalk
- Crosswalk
- Class II Bike Lane
- Bus Stop
- Park - and - Ride Lot

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3.5 Intersection Level of Service Analysis – Existing Conditions

This scenario evaluates the study intersections based on existing traffic volumes, lane geometry and traffic controls. The existing operations of the study intersections were evaluated for the highest one-hour volume during the weekday morning, school, and afternoon peak periods. Turning movement counts for vehicles, bicycles, and pedestrians were conducted during typical weekday a.m. peak and p.m. peak periods at the study intersections in March 2019.

Figure 4 illustrates the existing lane geometries and controls at the study intersections, and **Figure 5** shows existing peak hour traffic volumes. **Appendix A** includes data sheets for the collected vehicle, bicycle, and pedestrian counts.

The peak hour factors calculated from the existing turning movement counts were used for the study intersections for the Existing Conditions analysis. The results of the LOS analysis using the HCM 2000 methodology and Synchro 10 software program for Existing Conditions are summarized in **Table 4**. Under this scenario, all of the study intersections operates at acceptable LOS D or better during both peak periods.

At the unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp, the potential need for a traffic signal was evaluated based on the Manual on Uniform Traffic Control Devices (MUTCD) Peak Hour signal warrant. Based on existing peak hour traffic volumes, a signal would be warranted at this intersection during both peak hours. Existing Conditions intersection LOS worksheets and peak hour signal warrants are provided in **Appendix B**.

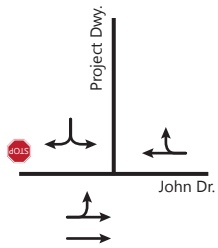
Table 4: Intersection Level of Service Analysis – Existing Conditions

ID	Intersections	Control Type	Peak Hour[1]	Existing Conditions	
				Average Delay	LOS[2]
1	John Dr. & Project Entrance	One-Way Stop	AM	11.8	B
			PM	12.4	B
2	Castro Valley Blvd. & John Dr./Strobridge Ave.	Signal	AM	22.3	C
			PM	27.0	C
3	Castro Valley Blvd. & Stanton Ave.	Signal	AM	42.1	D
			PM	45.1	D
4	Strobridge Ave./Stanton Ave. & I-580 WB Off-Ramp	One-Way Stop	AM	21.2	C
			PM	23.6	C
5	Strobridge Ave. & I-580 EB Ramps/Gary Dr.	Signal	AM	48.9	D
			PM	39.5	D

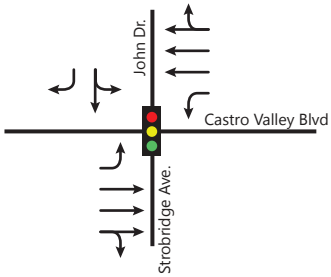
Notes:
[1]AM – morning peak hour (between 7 and 9 a.m.), PM – afternoon peak hour (between 4 and 6 p.m.)
[2]LOS – Level of Service calculations conducted using the Synchro 10 level of service analysis software package, which applies the methodology described in the HCM 2000.
Bold text indicates intersection operates at a deficient Level of Service.

Figure 4: Existing Lane Geometry and Traffic Controls

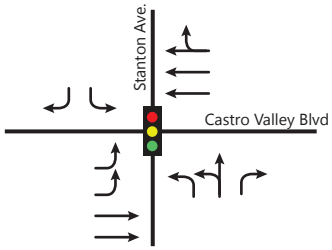
Intersection #1
John Dr. / Project Dwy.



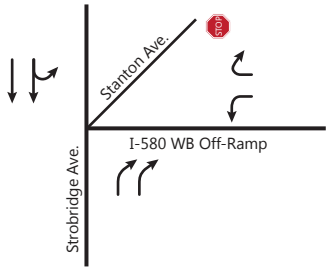
Intersection #2
Castro Valley Blvd. /
John Dr. & Strobridge Ave.



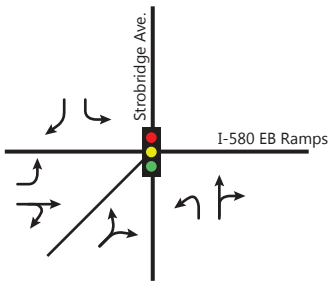
Intersection #3
Castro Valley Blvd. / Stanton Ave.



Intersection #4
Strobridge Ave. & Stanton Ave. /
I-580 WB Off-Ramp



Intersection #5
Strobridge Ave. / I-580 EB Ramps
& Gary Dr.



LEGEND

- Stop Sign
- Traffic Signal
- Study Intersection
- Project Site

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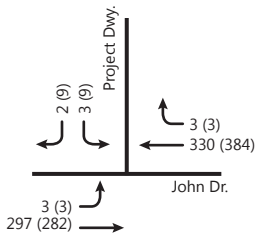
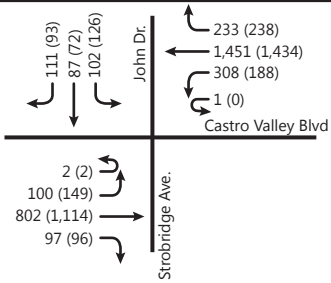
Figure 5: Existing Conditions Peak Hour Traffic Volumes

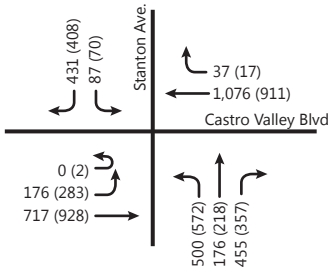
Intersection #1
John Dr. / Project Dwy.



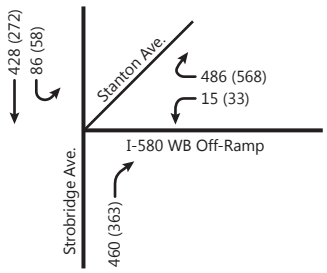
Intersection #2
Castro Valley Blvd. / John Dr. & Strobridge Ave.



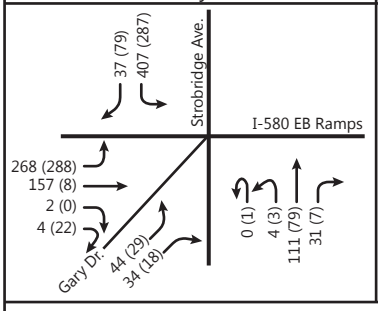
Intersection #3
Castro Valley Blvd. / Stanton Ave.



Intersection #4
Strobridge Ave. & Stanton Ave. / I-580 WB Off-Ramp



Intersection #5
Strobridge Ave. / I-580 EB Ramps & Gary Dr.



LEGEND

- X — Study Intersection
- Project Site
- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume

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4.0 EXISTING PLUS PROJECT CONDITIONS

This analysis scenario presents the impacts of the proposed project at the study intersections and surrounding roadway system. This scenario is similar to Existing Conditions, but with the addition of traffic from the proposed project.

4.1 PROJECT TRIP GENERATION

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the ITE publication *Trip Generation (10th Edition)*, based on the land use Medical-Dental Office Building (ITE Code 720). Driveway counts for the existing uses were conducted on March 28 and 29, 2019, and existing peak hour trips deducted from the project trip generation. **Table 5** shows the net new trips expected to be generated by the proposed project. The proposed project is expected to generate 870 net new daily trips, including 59 a.m. peak hour trips (50 in, 9 out) and 63 p.m. peak hour trips (18 in, 45 out).

Table 5: Project Trip Generation

Land Use[1]	Size	Daily		AM Peak					PM Peak				
		Rate[1]	Trips	Rate[1]	In:Out	In	Out	Total	Rate[1]	In:Out	In	Out	Total
Medical-Dental Office Building (720)	25 ksf	34.80	870	2.78	53:47	55	15	70	3.46	28:72	24	63	87
Existing Uses						5	6	11			6	18	24
Net Trips (New – Existing)			**870**			**50**	**9**	**59**			**18**	**45**	**63**

Notes
[1] Source: ITE *Trip Generation Manual, 10th Edition*, 2017

4.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area. Trip assignment also determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution. Trip distribution assumptions for the proposed project were developed based on existing travel patterns and knowledge of the study area.

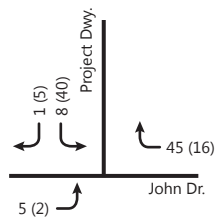
The distribution assumptions are as follows:

- 40 percent to/from I-238, I-580, and Hayward, via Castro Valley Boulevard to the west
- 20 percent to/from I-580 to the east
- 20 percent to/from Castro Valley Boulevard to the east
- Ten percent to/from Stanton Avenue to the north
- Ten percent to/from John Drive/Foothill Boulevard to the west

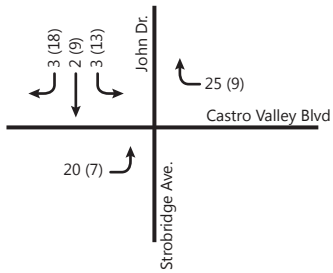
Figure 6 illustrates the trip distribution percentages and project trip assignment volumes developed for the proposed project. The assigned project trips were then added to traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

Figure 6: Project Trip Distribution and Assignment

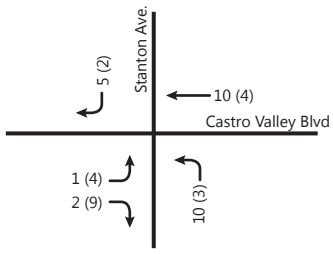
Intersection #1
John Dr. / Project Dwy.



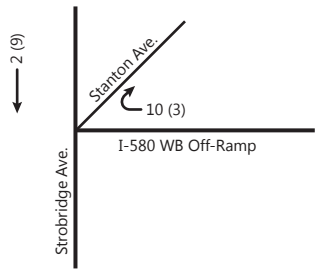
Intersection #2
Castro Valley Blvd. /
John Dr. & Strobridge Ave.



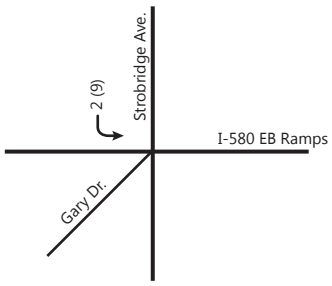
Intersection #3
Castro Valley Blvd. / Stanton Ave.



Intersection #4
Strobridge Ave. & Stanton Ave. /
I-580 WB Off-Ramp



Intersection #5
Strobridge Ave. / I-580 EB Ramps
& Gary Dr.



LEGEND

- X — Study Intersection
- Project Site
- XX — AM Peak Hour Trips
- (XX) — PM Peak Hour Trips
- XX% — Trip Distribution

N

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4.3 Intersection Level of Service Analysis – Existing plus Project Conditions

Intersection levels of service were calculated with the new traffic added by the proposed project to evaluate the operating conditions of the intersections and identify potential impacts to the roadway system. The results of the intersection level of service calculations for Existing plus Project Conditions are presented in **Table 6**. The results for Existing Conditions are included for comparison purposes, along with the projected increases in average delay. The changes in delay between Existing and each Existing plus Project Conditions are used to identify potential significant impacts. **Figure 7** shows projected turning movement volumes at all the study intersections for Existing plus Project Conditions under each project alternative. Under Existing plus Project conditions, all of the study intersections would continue to operate at LOS D or better during both peak periods.

The unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp would continue to satisfy the peak hour signal warrant. Based on existing peak hour traffic volumes, a signal would be warranted at this intersection during both peak hours. **Appendix C** contains the corresponding intersection LOS worksheets and peak hour signal warrants. Based on the Alameda County and Castro Valley impact criteria, the project is expected to have a **less-than-significant** impact.

Table 6: Intersection Level of Service Analysis – Existing plus Project Conditions

ID	Intersections	Control Type	Peak Hour[1]	Existing Conditions		Existing plus Project Conditions		
				Average Delay	LOS[2]	Average Delay	LOS[2]	Change in Avg. Delay
1	John Dr. & Project Entrance	One-Way Stop	AM	11.8	B	12.8	B	1.0
			PM	12.4	B	14.2	B	1.8
2	Castro Valley Blvd. & John Dr./Strobridge Ave.	Signal	AM	22.3	C	24.9	C	2.6
			PM	27.0	C	27.1	C	0.1
3	Castro Valley Blvd. & Stanton Ave.	Signal	AM	42.1	D	43.2	D	1.1
			PM	45.1	D	45.5	D	0.4
4	Strobridge Ave./Stanton Ave. & I-580 WB Off-Ramp	One-Way Stop	AM	21.2	C	21.9	C	0.7
			PM	23.6	C	24.0	C	0.4
5	Strobridge Ave. & I-580 EB Ramps/Gary Dr.	Signal	AM	48.9	D	49.2	D	0.3
			PM	39.5	D	40.0	D	0.5

Notes:
[1]AM – morning peak hour (between 7 and 9 a.m.), PM – afternoon peak hour (between 4 and 6 p.m.)
[2]LOS – Level of Service calculations conducted using the Synchro 10 level of service analysis software package, which applies the methodology described in the HCM 2000.
Bold text indicates intersection operates at a deficient Level of Service.

4.4 Queuing Analysis

Queueing operations were evaluated at the dedicated eastbound turn pocket at the study intersection of Castro Valley Boulevard & John Drive/Strobridge Avenue and for outbound traffic at the project driveway. Turn lanes that extend the full distance between intersections were not included. The 95th percentile queuing analysis results for these signalized intersections under Existing and Existing plus Project Conditions are summarized in **Table 7**, rounded to the nearest five feet. The results for Existing Conditions are included for comparison purposes, along with projected increases in queue length with the addition of project traffic.

Existing queue lengths are entirely accommodated in the available storage lengths at Castro Valley Boulevard & John Drive/Strobridge Avenue, and the outbound driveway queue is minimal. The proposed project would add approximately one vehicle length at the signalized intersection, and the outbound driveway queue is expected to be one vehicle at most. The proposed project ***does not create a significant impact*** on the expected left-turn or right-turn queues at the driveway or study intersection.

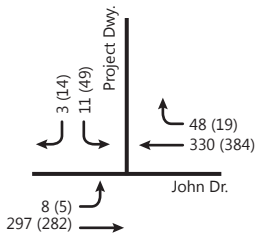
Table 7: 95th Percentile Queue Lengths

ID	*Study Intersections*	*Lane Group*	*Storage Length[1]*	*Peak Hour*	*Existing Volume*	*Project Trips*	*Existing*	*Existing plus Project*	
							Queue Length	*Queue Length*	*Change in Queue*
1	John Dr. & Project Entrance	Southbound	NA	AM	5	9	<5	<5	<5
				PM	18	45	5	15	10
2	Castro Valley Blvd. & John Dr./ Strobridge Ave.	Eastbound Left	325	AM	102	20	105	135	30
				PM	145	7	150	150	5

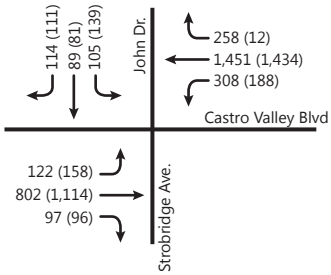
Notes:
[1] Storage length and 95th percentile queue are expressed in feet per lane, rounded to the nearest 10 feet.
Bold indicates overflow.

Figure 7: Existing plus Project Conditions Traffic Volumes

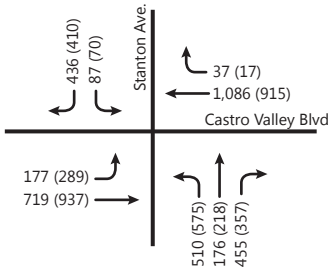
Intersection #1
John Dr. / Project Dwy.



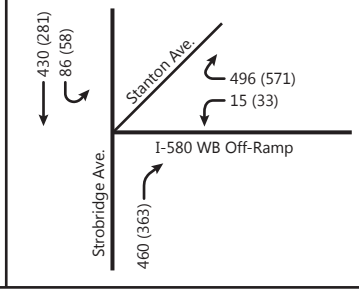
Intersection #2
Castro Valley Blvd. /
John Dr. & Strobridge Ave.



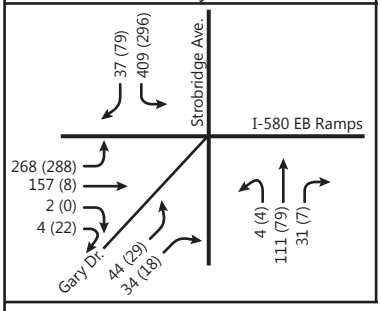
Intersection #3
Castro Valley Blvd. / Stanton Ave.



Intersection #4
Strobridge Ave. & Stanton Ave. /
I-580 WB Off-Ramp



Intersection #5
Strobridge Ave. / I-580 EB Ramps
& Gary Dr.



LEGEND

- X — Study Intersection
- Project Site
- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume

N

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5.0 CUMULATIVE CONDITIONS

This scenario evaluates projected traffic in the project vicinity for a horizon year of 2035. Cumulative Conditions traffic volumes are based on Existing Conditions traffic volumes, increased with a conservative annual growth rate of two percent.

5.1 Intersection Level of Service Analysis – Cumulative Conditions

Intersection levels of service were calculated with expected traffic volumes, using existing lane geometry and intersection control. **Figure 8** shows projected turning movement volumes at all study intersections for Cumulative Conditions. The results of the intersection level of service calculations for Cumulative Conditions are presented in **Table 8**. Under this scenario, the project entrance and the intersection of Castro Valley Boulevard & John Drive/Strobridge Avenue would operate at acceptable LOS C or better during both peak periods. The remaining study intersections would operate at unacceptable LOS E or F during both peak hours.

The unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp would continue to satisfy the peak hour signal warrant. Based on existing peak hour traffic volumes, a signal would be warranted at this intersection during both peak hours. **Appendix D** contains the corresponding intersection LOS worksheets and peak hour signal warrants.

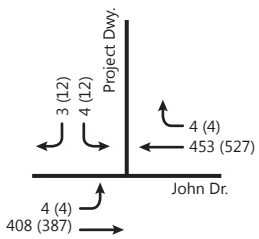
Table 8: Intersection Level of Service Analysis – Cumulative Conditions

ID	Intersections	Control Type	Peak Hour[1]	Cumulative Conditions	
				Average Delay	LOS[2]
1	John Dr. & Project Entrance	One-Way Stop	AM	13.8	B
			PM	15.1	C
2	Castro Valley Blvd. & John Dr./Strobridge Ave.	Signal	AM	33.1	C
			PM	33.1	C
3	Castro Valley Blvd. & Stanton Ave.	Signal	AM	**117.8**	**F**
			PM	**122.8**	**F**
4	Strobridge Ave./Stanton Ave. & I-580 WB Off-Ramp	One-Way Stop	AM	**101.3**	**F**
			PM	**123.3**	**F**
5	Strobridge Ave. & I-580 EB Ramps/Gary Dr.	Signal	AM	**94.2**	**F**
			PM	**67.0**	**E**

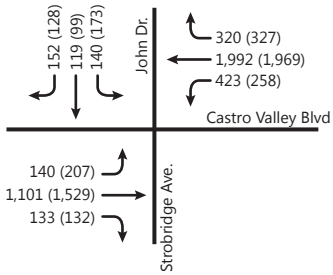
Notes:
[1]AM – morning peak hour (between 7 and 9 a.m.), PM – afternoon peak hour (between 4 and 6 p.m.)
[2]LOS – Level of Service calculations conducted using the Synchro 10 level of service analysis software package, which applies the methodology described in the HCM 2000.
Bold text indicates intersection operates at a deficient Level of Service.

Figure 8: Cumulative Conditions Peak Hour Traffic Volumes

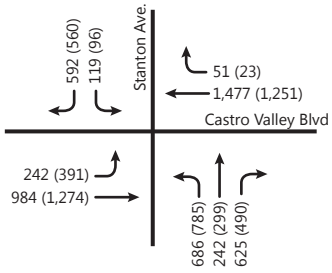
Intersection #1
John Dr. / Project Dwy.



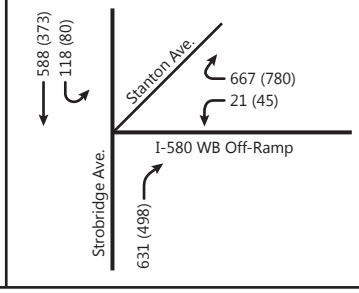
Intersection #2
Castro Valley Blvd. / John Dr. & Strobridge Ave.



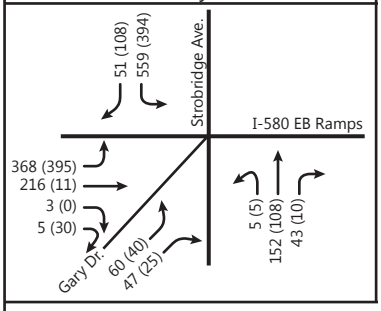
Intersection #3
Castro Valley Blvd. / Stanton Ave.



Intersection #4
Strobridge Ave. & Stanton Ave. / I-580 WB Off-Ramp



Intersection #5
Strobridge Ave. / I-580 EB Ramps & Gary Dr.



LEGEND

- X — Study Intersection
- Project Site
- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume

N

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6.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario evaluates projected traffic in the project vicinity for a horizon year of 2035. This scenario is similar to Cumulative Conditions, but with the addition of traffic from the proposed project.

6.1 Intersection Level of Service Analysis – Cumulative plus Project Conditions

Intersection levels of service were calculated with expected traffic volumes, using Existing plus Project lane geometry and intersection control. **Figure 9** shows projected turning movement volumes at all study intersections for Cumulative plus Project Conditions. The results of the intersection level of service calculations for Cumulative plus Project Conditions are presented in **Table 9**. The results for Cumulative Conditions and changes in delay are included for comparison purposes. Under this scenario, the project entrance and the intersection of Castro Valley Boulevard & John Drive/Strobridge Avenue would operate at acceptable LOS C or better during both peak periods. The remaining three study intersections would operate at unacceptable LOS E or F during both peak hours. Of these intersections, only the unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp would experience an increase in delay of over 5.0 seconds, a potentially significant impact.

The unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp would continue to satisfy the peak hour signal warrant. Based on existing peak hour traffic volumes, a signal would be warranted at this intersection during both peak hours. **Appendix E** contains the corresponding intersection LOS worksheets and peak hour signal warrants.

Table 9: Intersection Level of Service Analysis – Cumulative plus Project Conditions

ID	Intersections	Control Type	Peak Hour[1]	Cumulative Conditions		Cumulative plus Project Conditions		
				Average Delay	LOS[2]	Average Delay	LOS[2]	Change in Avg. Delay
1	John Dr. & Project Entrance	One-Way Stop	AM	13.8	B	15.3	C	1.5
			PM	15.1	C	18.5	C	3.4
2	Castro Valley Blvd. & John Dr./Strobridge Ave.	Signal	AM	33.1	C	35.1	D	2.0
			PM	33.1	C	34.2	C	1.1
3	Castro Valley Blvd. & Stanton Ave.	Signal	AM	**117.8**	**F**	**120.2**	**F**	2.4
			PM	**122.8**	**F**	**124.4**	**F**	1.6
4	Strobridge Ave./Stanton Ave. & I-580 WB Off-Ramp	One-Way Stop	AM	**101.3**	**F**	**107.4**	**F**	**6.1**
			PM	**123.3**	**F**	**125.4**	**F**	2.1
	Mitigation: Signalize	*Signal*	*AM*			*21.0*	*C*	*-80.3*
			PM			*25.5*	*C*	*-97.8*
5	Strobridge Ave. & I-580 EB Ramps/Gary Dr.	Signal	AM	**94.2**	**F**	**94.6**	**F**	0.4
			PM	**67.0**	**E**	**68.7**	**E**	1.7

Notes:
[1]AM – morning peak hour (between 7 and 9 a.m.), PM – afternoon peak hour (between 4 and 6 p.m.)
[2]LOS – Level of Service calculations conducted using the Synchro 10 level of service analysis software package, which applies the methodology described in the HCM 2000.
Bold text indicates intersection operates at a deficient Level of Service.

Mitigation Measures

The unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp was reanalyzed using Synchro 10 software with the addition of a traffic signal, with no changes to the existing

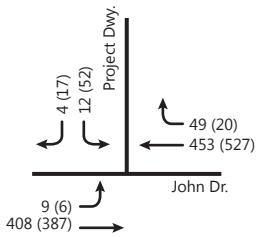
lane geometry. With signalization, the intersection would operate at acceptable LOS C during both peak hours.

Although signalization would mitigate the significant project impact, this intersection already meets peak hour signal warrants under all scenarios, including Existing (no Project) Conditions. It should also be noted that the westbound freeway exit at Strobridge Avenue is under consideration for a substantial redesign, which would include signalization and the potential addition of a westbound on-ramp. Such alterations could be reasonably expected to eliminate any cumulative project impact at this intersection.

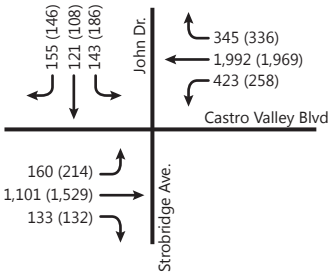
Based on the Alameda County and Castro Valley impact criteria, with mitigation the project is expected to have a **less-than-significant** impact.

Figure 9: Cumulative plus Project Conditions peak Hour Traffic Volumes

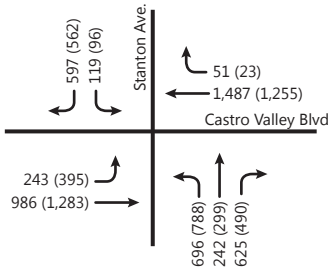
Intersection #1
John Dr. / Project Dwy.



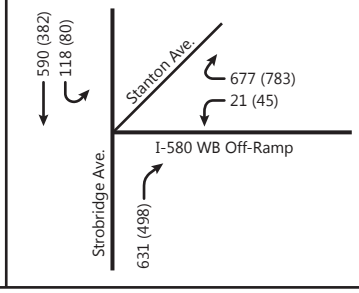
Intersection #2
Castro Valley Blvd. /
John Dr. & Strobridge Ave.



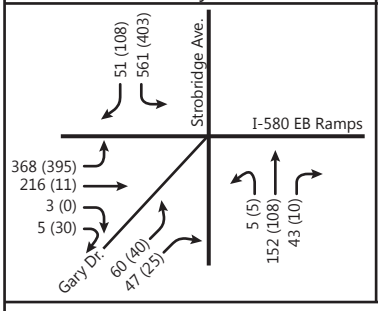
Intersection #3
Castro Valley Blvd. / Stanton Ave.



Intersection #4
Strobridge Ave. & Stanton Ave. /
I-580 WB Off-Ramp



Intersection #5
Strobridge Ave. / I-580 EB Ramps
& Gary Dr.



LEGEND

- X — Study Intersection
- Project Site
- XX — AM Peak Hour Volume
- (XX) — PM Peak Hour Volume

N

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7.0 SITE ACCESS AND ON-SITE CIRCULATION AND OTHER IMPACTS

The following sections provide additional analyses of other transportation issues associated with the project site, including:

1. Site Access
2. On-Site Circulation
3. Parking analysis.

7.1 Site Access and On-Site Circulation

This section analyzes site access and for vehicles based on the site plan presented in **Figure 2**, dated February 4, 2019. The project would be accessed via one 26-foot driveway on John Drive. The site plan also shows a continuous path of travel for pedestrians from the existing sidewalk to the project entrances. The parking lot features 24-foot two-way drive aisles and right-angle parking spaces. There is adequate room for vehicles to maneuver into and out of parking spaces, for garbage trucks to access the trash enclosure, and for emergency vehicles to access the site. As discussed in section 4.4, outbound vehicle queues are expected to be at most one vehicle. Site access and circulation for vehicles would be **adequate**.

7.2 Pedestrian, Bicycle, and Transit Access

Existing pedestrian, bicycle, and transit facilities are shown in **Figure 3**. Pedestrian access to the site would be provided via a continuous path of travel from the existing sidewalk to the project entrances. There are sidewalks on the north side of John both sides of Castro Valley Boulevard in the project vicinity, with crosswalks at Castro Valley Boulevard. Bicycles would access the site via the existing bicycle lanes on John Drive and Castro Valley Boulevard. Peak hour intersection counts showed moderate pedestrian activity and very few bicycles at the intersections on Castro Valley Boulevard, with higher pedestrian volumes in the afternoon. Although there are bus stops very close to the project site, these are served by a commute peak, Transbay bus route, which begins at the Castro Valley Park & Ride located immediately west of the project site. The Castro Valley BART station is located 0.8 miles away. Transit access to the project site is therefore limited. Site access for pedestrians and bicycles would be **adequate**. The project is not expected to produce new hazards or conflicts with existing pedestrian, bicycle, or transit plans and would thus have a **less-than-significant impact** on existing pedestrian, bicycle, and transit facilities.

7.3 Parking and Loading Analysis

The Alameda County Code of Ordinances specifies parking requirements for various land uses. For business uses, parking requirements are calculated based on the building square footage, minus areas such as restrooms or areas for storage or maintenance. The site plan (**Figure 2**) shows a gross floor area of 25,000 sq. ft., and a net area of 22,500 sq. ft. for parking calculations, 90 percent of the building floor area. Office uses are required to provide one parking space per 250 sq. ft. floor area. Commercial uses of 15,000-40,000 sq. ft. require one loading space. The proposed project would thus require 90 parking spaces and one loading space. Under the California Building Code, a parking lot of 76-100 spaces would require four accessible spaces, including one van accessible space.

TJKM developed estimated parking demand for the proposed project based on published parking demand rates from the ITE publication Parking Generation (5th Edition), based on the land use Medical-Dental Office Building (720). This use generates an average peak parking demand of 3.23 spaces per 1,000 sq. ft. gross floor area. For a 25,000 sq. ft. building, the proposed project would generate demand for 81 parking spaces.

The project site plan shows a proposed parking supply of 98 spaces, including 49 compact spaces and 49 standard spaces. Four of the standard spaces would be accessible. There is also a loading area shown. Based on the proposed parking to be provided on site, it is expected that the parking supply will be **adequate**, and that the project will have a **less-than-significant impact** on neighborhood streets.

8.0 CONCLUSIONS

- The proposed medical office development is expected to generate 870 net new daily trips, including 59 a.m. peak hour trips (50 in, nine out) and 63 p.m. peak hour trips (18 in, 45 out).

- Under Existing Conditions, all study intersections operate at acceptable LOS D or better during both peak periods.

- Under Existing plus Project Conditions, all intersections would continue to operate at acceptable LOS D or better during all peak periods. Based on the Alameda County and Castro Valley impact criteria the project is expected to have **a less-than-significant impact** at all study intersections under Existing plus Project Conditions.

- Under Cumulative Conditions, the project entrance and the intersection of Castro Valley Boulevard & John Drive/Strobridge Avenue would operate at acceptable LOS C or better during both peak periods. The remaining study intersections would operate at unacceptable LOS E or F during both peak hours.

- Under Cumulative plus Project Conditions, the project entrance and the intersection of Castro Valley Boulevard & John Drive/Strobridge Avenue would operate at acceptable LOS D or better during both peak periods. The remaining study intersections would operate at unacceptable LOS E or F during both peak hours. The unsignalized intersection of Strobridge Avenue/Stanton Avenue & I-580 Westbound Off-Ramp would experience a potentially significant impact, which could be mitigated with signalization. Based on the Alameda County and Castro Valley impact criteria, with mitigation the project is expected to have **a less-than-significant impact** at all study intersections under Cumulative plus Project Conditions.

- The project site would be accessed via one 26-foot driveway on John Drive. The parking lot features 24-foot drive aisles and right-angle parking. The project would provide **adequate** access and on-site circulation for vehicles, and adequate access for emergency vehicles and garbage trucks. The project would provide 98 parking spaces, which meets both the County requirement of 90 parking spaces and the estimated ITE parking demand of 81 parking spaces. The project is expected to produce a **less than significant impact** either on-site or on public streets.

- A continuous accessible pedestrian path and existing pedestrian and bicycle facilities provide adequate access to the project site, although usable transit is limited. The project would produce a **less-than-significant impact** on existing facilities.

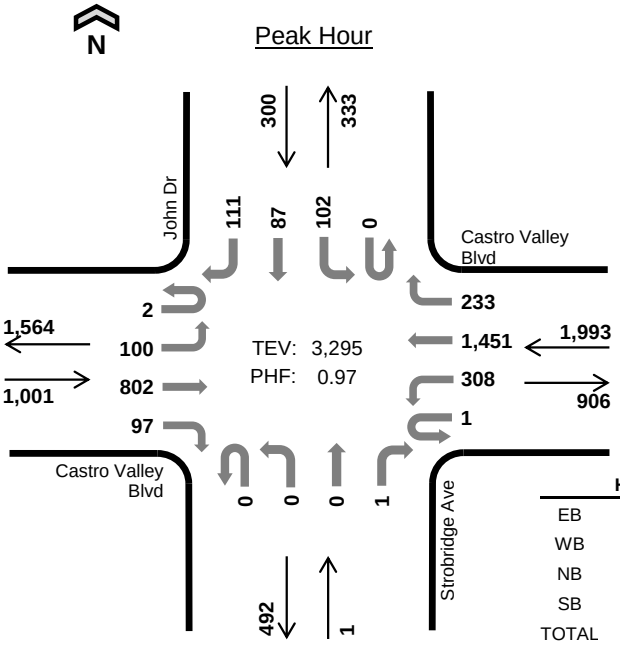
Appendix A – Existing Turning Movement Counts

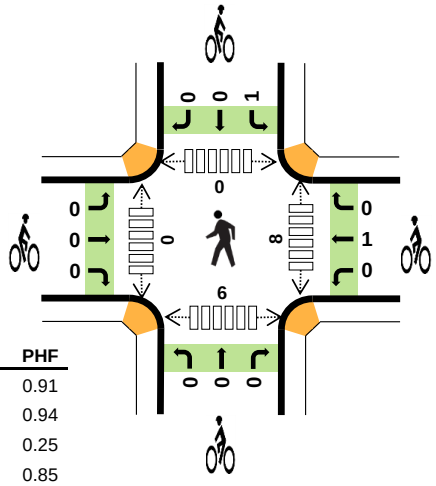
19132 - Castro Valley - I-580 TMCs
Driveway Counts: In/Out
3/28/19 & 3/29/19
IDAX Data Solutions

Location 1: Driveways on John Dr			Hourly totals		
Time	INS	OUTS	Ins	Outs	Total
7:00	1	0	4	2	6
7:15	0	0	5	3	8
7:30	1	0	5	3	8
7:45	2	2	6	5	11
8:00	2	1	5	3	8
8:15	0	0			
8:30	2	2			
8:45	1	0			
4:00	2	2	7	11	18
4:15	2	0	5	14	19
4:30	1	2	5	17	22
4:45	2	7	6	18	24
5:00	0	5	5	13	18
5:15	2	3			
5:30	2	3			
5:45	1	2			
Total	21	29			

Strobridge Ave
Castro Valley Blvd

Date: 03-21-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	2.0%	0.91
WB	1.3%	0.94
NB	0.0%	0.25
SB	0.7%	0.85
TOTAL	1.5%	0.97

Two-Hour Count Summaries

Interval Start		Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Strobridge Ave Northbound				John Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM		0	9	99	13	0	53	305	19	0	0	0	0	0	12	13	23	546	0
7:15 AM		0	22	95	18	0	65	315	27	0	0	0	1	0	21	21	23	608	0
7:30 AM		0	25	161	20	0	79	340	33	0	0	0	0	0	34	18	22	732	0
7:45 AM		**0**	**25**	**234**	**15**	**0**	**69**	**328**	**44**	**0**	**0**	**0**	**0**	**0**	**33**	**25**	**30**	**803**	2,689
8:00 AM		**1**	**23**	**191**	**32**	**0**	**89**	**385**	**55**	**0**	**0**	**0**	**1**	**0**	**15**	**28**	**28**	**848**	2,991
8:15 AM		**1**	**28**	**188**	**22**	**1**	**90**	**359**	**68**	**0**	**0**	**0**	**0**	**0**	**25**	**19**	**18**	**819**	3,202
8:30 AM		**0**	**24**	**189**	**28**	**0**	**60**	**379**	**66**	**0**	**0**	**0**	**0**	**0**	**29**	**15**	**35**	**825**	**3,295**
8:45 AM		0	13	180	25	0	63	344	68	0	0	0	0	0	26	29	21	769	3,261
Count Total		2	169	1,337	173	1	568	2,755	380	0	0	0	2	0	195	168	200	5,950	0
Peak Hour	**All**	**2**	**100**	**802**	**97**	**1**	**308**	**1,451**	**233**	**0**	**0**	**0**	**1**	**0**	**102**	**87**	**111**	**3,295**	**0**
	HV	**0**	**3**	**17**	**0**	**0**	**3**	**18**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**48**	**0**
	HV%	**0%**	**3%**	**2%**	**0%**	**0%**	**1%**	**1%**	**2%**	**-**	**-**	**-**	**0%**	**-**	**0%**	**1%**	**1%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	2	3	0	3	*8*	0	1	0	0	*1*	0	0	0	2	*2*
7:15 AM	3	8	0	1	*12*	0	0	0	0	*0*	1	0	0	1	*2*
7:30 AM	5	4	0	1	*10*	0	0	0	0	*0*	2	0	0	5	*7*
7:45 AM	**5**	**9**	**0**	**1**	***15***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**0**	**2**	*4*
8:00 AM	**5**	**3**	**0**	**1**	***9***	**0**	**1**	**0**	**0**	***1***	**3**	**0**	**0**	**0**	*3*
8:15 AM	**4**	**7**	**0**	**0**	***11***	**0**	**0**	**0**	**1**	***1***	**2**	**0**	**0**	**3**	*5*
8:30 AM	**6**	**7**	**0**	**0**	***13***	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**1**	***2***
8:45 AM	5	7	0	1	*13*	0	0	0	0	*0*	3	0	0	0	*3*
Count Total	35	48	0	8	*91*	0	2	0	1	*3*	14	0	0	14	*28*
Peak Hour	**20**	**26**	**0**	**2**	***48***	**0**	**1**	**0**	**1**	***2***	**8**	**0**	**0**	**6**	***14***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd				Castro Valley Blvd				Strobridge Ave				John Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	2	0	0	0	2	1	0	0	0	0	0	1	1	1	8	0
7:15 AM	0	0	3	0	0	1	5	2	0	0	0	0	0	0	0	1	12	0
7:30 AM	0	2	3	0	0	1	1	2	0	0	0	0	0	0	0	1	10	0
7:45 AM	**0**	**2**	**3**	**0**	**0**	**1**	**7**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**15**	45
8:00 AM	**0**	**1**	**4**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**9**	46
8:15 AM	**0**	**0**	**4**	**0**	**0**	**2**	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	45
8:30 AM	**0**	**0**	**6**	**0**	**0**	**0**	**5**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13**	**48**
8:45 AM	0	0	4	1	0	0	4	3	0	0	0	0	0	1	0	0	13	46
Count Total	0	5	29	1	0	5	30	13	0	0	0	0	0	2	2	4	91	0
Peak Hour	**0**	**3**	**17**	**0**	**0**	**3**	**18**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**48**	**0**

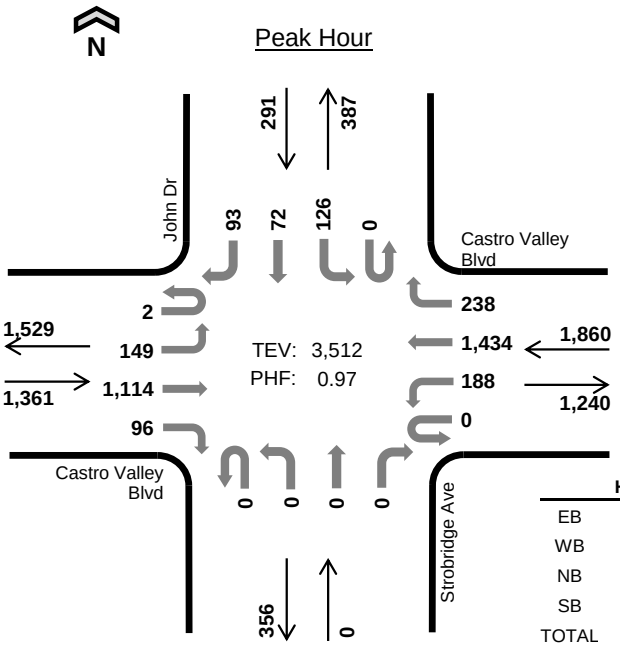
Two-Hour Count Summaries - Bikes

Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:00 AM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	2
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Count Total	0	0	0	0	2	0	0	0	0	1	0	0	3	0
Peak Hour	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**

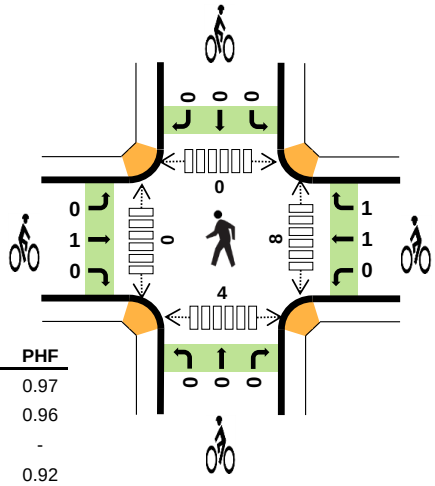
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Strobridge Ave
Castro Valley Blvd

Date: 03-21-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM



	HV %:	PHF
EB	0.4%	0.97
WB	0.7%	0.96
NB	-	-
SB	1.0%	0.92
TOTAL	0.6%	0.97



Two-Hour Count Summaries

Interval Start		Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Strobridge Ave Northbound				John Dr Southbound				15-min Total	Rolling One Hour
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		2	35	277	23	0	51	375	56	0	0	0	0	0	32	25	23	899	0
4:15 PM		3	27	215	23	0	47	398	55	0	0	0	0	0	28	11	34	841	0
4:30 PM		1	38	251	27	0	50	394	52	0	0	0	0	0	29	18	16	876	0
4:45 PM		**1**	**38**	**274**	**21**	**0**	**36**	**351**	**67**	**0**	**0**	**0**	**0**	**0**	**26**	**13**	**18**	**845**	3,461
5:00 PM		**0**	**41**	**278**	**27**	**0**	**56**	**375**	**53**	**0**	**0**	**0**	**0**	**0**	**35**	**20**	**24**	**909**	3,471
5:15 PM		**0**	**34**	**269**	**26**	**0**	**40**	**368**	**63**	**0**	**0**	**0**	**0**	**0**	**37**	**19**	**20**	**876**	3,506
5:30 PM		**1**	**36**	**293**	**22**	**0**	**56**	**340**	**55**	**0**	**0**	**0**	**0**	**0**	**28**	**20**	**31**	**882**	**3,512**
5:45 PM		0	32	269	40	0	67	269	65	0	0	0	0	0	41	23	26	832	3,499
Count Total		8	281	2,126	209	0	403	2,870	466	0	0	0	0	0	256	149	192	6,960	0
Peak Hour	**All**	**2**	**149**	**1,114**	**96**	**0**	**188**	**1,434**	**238**	**0**	**0**	**0**	**0**	**0**	**126**	**72**	**93**	**3,512**	**0**
	HV	**0**	**3**	**2**	**0**	**0**	**1**	**11**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**21**	**0**
	HV%	**0%**	**2%**	**0%**	**0%**	**-**	**1%**	**1%**	**0%**	**-**	**-**	**-**	**-**	**-**	**2%**	**1%**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	10	0	1	*11*	0	0	0	0	*0*	1	0	0	3	*4*
4:15 PM	1	10	0	0	*11*	0	1	0	0	*1*	0	0	0	0	*0*
4:30 PM	2	1	0	1	*4*	0	1	0	0	*1*	0	0	1	2	*3*
4:45 PM	**2**	**5**	**0**	**1**	***8***	**0**	**0**	**0**	**0**	***0***	**4**	**0**	**0**	**1**	*5*
5:00 PM	**0**	**6**	**0**	**1**	***7***	**1**	**0**	**0**	**0**	***1***	**4**	**0**	**0**	**1**	*5*
5:15 PM	**0**	**1**	**0**	**1**	***2***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	*1*
5:30 PM	**3**	**1**	**0**	**0**	***4***	**0**	**1**	**0**	**0**	***1***	**0**	**0**	**0**	**1**	***1***
5:45 PM	1	3	0	2	*6*	0	1	0	0	*1*	1	0	0	0	*1*
Count Total	9	37	0	7	*53*	1	5	0	0	*6*	10	0	1	9	*20*
Peak Hour	**5**	**13**	**0**	**3**	***21***	**1**	**2**	**0**	**0**	***3***	**8**	**0**	**0**	**4**	***12***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd				Castro Valley Blvd				Strobridge Ave				John Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	9	1	0	0	0	0	0	1	0	0	11	0
4:15 PM	0	0	1	0	0	2	7	1	0	0	0	0	0	0	0	0	11	0
4:30 PM	0	1	1	0	0	0	1	0	0	0	0	0	0	1	0	0	4	0
4:45 PM	**0**	**1**	**1**	**0**	**0**	**0**	**4**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**8**	34
5:00 PM	**0**	**0**	**0**	**0**	**0**	**1**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**7**	30
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	21
5:30 PM	**0**	**2**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**21**
5:45 PM	0	0	1	0	0	0	3	0	0	0	0	0	0	2	0	0	6	19
Count Total	0	4	5	0	0	3	31	3	0	0	0	0	0	6	1	0	53	0
Peak Hour	**0**	**3**	**2**	**0**	**0**	**1**	**11**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**1**	**0**	**21**	**0**

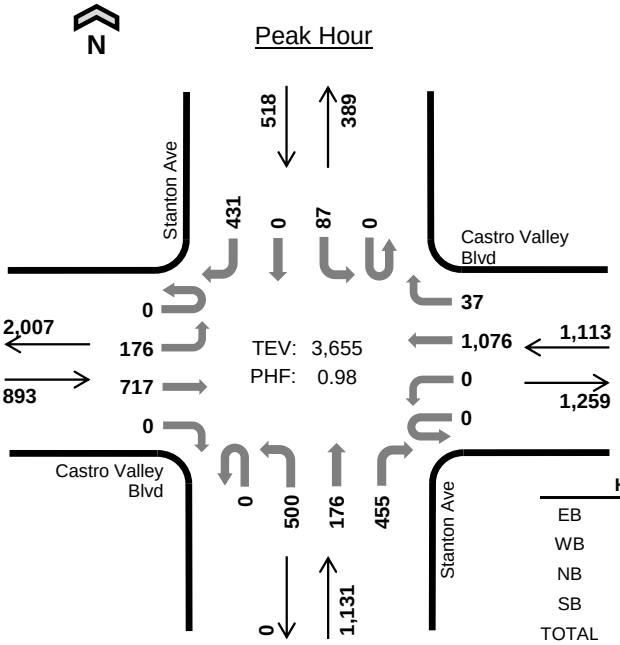
Two-Hour Count Summaries - Bikes

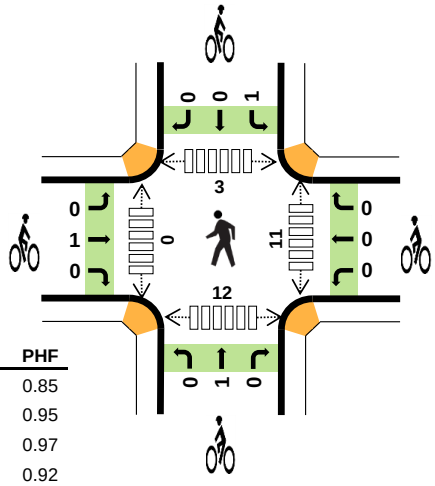
Interval Start	Castro Valley Blvd			Castro Valley Blvd			Strobridge Ave			John Dr			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
5:15 PM	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
5:30 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	4
Count Total	0	1	0	0	2	3	0	0	0	0	0	0	6	0
Peak Hour	**0**	**1**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Stanton Ave
Castro Valley Blvd

Date: 03-21-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM





	HV %:	PHF
EB	1.8%	0.85
WB	1.3%	0.95
NB	1.4%	0.97
SB	0.4%	0.92
TOTAL	1.3%	0.98

Two-Hour Count Summaries

Interval Start	Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Stanton Ave Northbound				Stanton Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	23	85	0	0	0	225	3	0	73	33	42	0	12	0	77	573	0
7:15 AM	0	24	96	0	0	0	235	2	0	96	34	47	0	10	0	80	624	0
7:30 AM	0	33	153	0	0	0	245	9	0	106	36	64	0	14	0	109	769	0
7:45 AM	**0**	**49**	**213**	**0**	**0**	**0**	**243**	**11**	**0**	**108**	**43**	**140**	**0**	**19**	**0**	**96**	**922**	2,888
8:00 AM	**0**	**41**	**168**	**0**	**0**	**0**	**286**	**8**	**0**	**130**	**42**	**117**	**0**	**28**	**0**	**108**	**928**	3,243
8:15 AM	**0**	**49**	**164**	**0**	**0**	**0**	**274**	**9**	**0**	**125**	**44**	**105**	**0**	**18**	**0**	**123**	**911**	3,530
8:30 AM	**0**	**37**	**172**	**0**	**0**	**0**	**273**	**9**	**0**	**137**	**47**	**93**	**0**	**22**	**0**	**104**	**894**	**3,655**
8:45 AM	0	42	176	0	0	0	232	6	0	129	42	83	0	11	0	104	825	3,558
Count Total	0	298	1,227	0	0	0	2,013	57	0	904	321	691	0	134	0	801	6,446	0
Peak Hour All	**0**	**176**	**717**	**0**	**0**	**0**	**1,076**	**37**	**0**	**500**	**176**	**455**	**0**	**87**	**0**	**431**	**3,655**	**0**
Peak Hour HV	**0**	**1**	**15**	**0**	**0**	**0**	**15**	**0**	**0**	**8**	**2**	**6**	**0**	**0**	**0**	**2**	**49**	**0**
Peak Hour HV%	**-**	**1%**	**2%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**2%**	**1%**	**1%**	**-**	**0%**	**-**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	7	1	*12*	0	1	0	0	*1*	1	0	0	2	*3*
7:15 AM	4	6	2	2	*14*	0	0	0	0	*0*	1	0	2	1	*4*
7:30 AM	3	4	1	1	*9*	0	0	0	0	*0*	1	0	0	4	*5*
7:45 AM	**3**	**4**	**4**	**1**	***12***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**1**	**2**	*5*
8:00 AM	**2**	**1**	**5**	**0**	***8***	**0**	**0**	**0**	**0**	***0***	**3**	**0**	**1**	**4**	*8*
8:15 AM	**5**	**5**	**4**	**1**	***15***	**1**	**0**	**1**	**0**	***2***	**4**	**0**	**0**	**4**	*8*
8:30 AM	**6**	**5**	**3**	**0**	***14***	**0**	**0**	**0**	**1**	***1***	**2**	**0**	**1**	**2**	***5***
8:45 AM	5	2	5	2	*14*	0	0	0	0	*0*	0	0	2	2	*4*
Count Total	31	28	31	8	*98*	1	1	1	1	*4*	14	0	7	21	*42*
Peak Hour	**16**	**15**	**16**	**2**	***49***	**1**	**0**	**1**	**1**	***3***	**11**	**0**	**3**	**12**	***26***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Stanton Ave Northbound				Stanton Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	3	0	0	0	1	0	0	2	4	1	0	0	0	1	12	0
7:15 AM	0	0	4	0	0	0	6	0	0	0	1	1	0	0	0	2	14	0
7:30 AM	0	0	3	0	0	0	4	0	0	0	0	1	0	0	0	1	9	0
7:45 AM	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**0**	**3**	**0**	**1**	**0**	**0**	**0**	**1**	**12**	47
8:00 AM	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**1**	**2**	**0**	**0**	**0**	**0**	**8**	43
8:15 AM	**0**	**0**	**5**	**0**	**0**	**0**	**5**	**0**	**0**	**1**	**0**	**3**	**0**	**0**	**0**	**1**	**15**	44
8:30 AM	**0**	**1**	**5**	**0**	**0**	**0**	**5**	**0**	**0**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**14**	**49**
8:45 AM	0	1	4	0	0	0	2	0	0	3	0	2	0	0	0	2	14	51
Count Total	0	2	29	0	0	0	28	0	0	13	7	11	0	0	0	8	98	0
Peak Hour	**0**	**1**	**15**	**0**	**0**	**0**	**15**	**0**	**0**	**8**	**2**	**6**	**0**	**0**	**0**	**2**	**49**	**0**

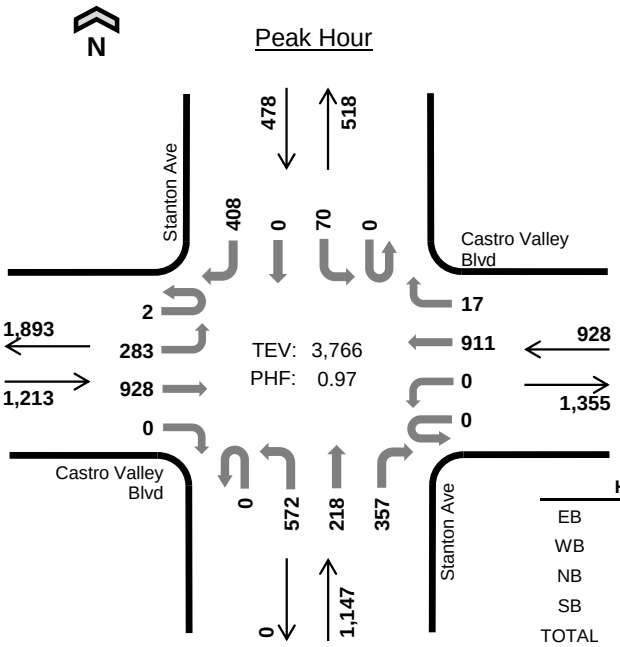
Two-Hour Count Summaries - Bikes

Interval Start	Castro Valley Blvd Eastbound			Castro Valley Blvd Westbound			Stanton Ave Northbound			Stanton Ave Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	1
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**2**	2
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**3**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	1	0	0	1	0	0	1	0	1	0	0	4	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**3**	**0**

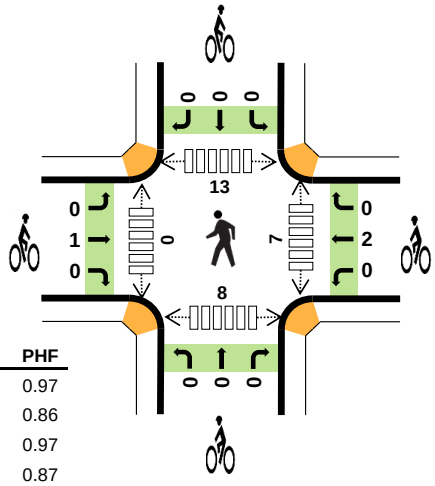
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Stanton Ave
Castro Valley Blvd

Date: 03-21-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	0.4%	0.97
WB	0.8%	0.86
NB	0.5%	0.97
SB	0.2%	0.87
TOTAL	0.5%	0.97



Two-Hour Count Summaries

Interval Start	Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Stanton Ave Northbound				Stanton Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	1	72	239	0	0	0	203	3	0	182	49	81	0	9	0	103	942	0
4:15 PM	0	67	198	0	0	0	232	2	0	180	52	93	0	15	0	84	923	0
4:30 PM	**0**	**63**	**218**	**0**	**0**	**0**	**266**	**4**	**0**	**136**	**52**	**86**	**0**	**26**	**0**	**91**	**942**	0
4:45 PM	**1**	**71**	**236**	**0**	**0**	**0**	**209**	**4**	**0**	**167**	**39**	**82**	**0**	**15**	**0**	**84**	**908**	3,715
5:00 PM	**1**	**73**	**240**	**0**	**0**	**0**	**205**	**4**	**0**	**142**	**66**	**81**	**0**	**13**	**0**	**124**	**949**	3,722
5:15 PM	**0**	**76**	**234**	**0**	**0**	**0**	**231**	**5**	**0**	**127**	**61**	**108**	**0**	**16**	**0**	**109**	**967**	**3,766**
5:30 PM	0	66	246	0	0	0	244	8	0	90	49	101	0	17	0	108	929	3,753
5:45 PM	1	61	255	0	0	0	214	5	0	97	53	98	0	13	0	89	886	3,731
Count Total	4	549	1,866	0	0	0	1,804	35	0	1,121	421	730	0	124	0	792	7,446	0
Peak Hour All	**2**	**283**	**928**	**0**	**0**	**0**	**911**	**17**	**0**	**572**	**218**	**357**	**0**	**70**	**0**	**408**	**3,766**	**0**
Peak Hour HV	**0**	**0**	**5**	**0**	**0**	**0**	**7**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**0**	**1**	**19**	**0**
Peak Hour HV%	**0%**	**0%**	**1%**	**-**	**-**	**-**	**1%**	**0%**	**-**	**1%**	**0%**	**0%**	**-**	**0%**	**-**	**0%**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	2	9	0	*12*	0	0	0	0	*0*	1	0	1	2	*4*
4:15 PM	1	2	7	1	*11*	0	0	0	1	*1*	0	0	2	1	*3*
4:30 PM	**2**	**0**	**2**	**0**	***4***	**0**	**1**	**0**	**0**	***1***	**2**	**0**	**6**	**2**	*10*
4:45 PM	**1**	**1**	**3**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**2**	**0**	**5**	**1**	*8*
5:00 PM	**1**	**6**	**0**	**0**	***7***	**1**	**0**	**0**	**0**	***1***	**0**	**0**	**1**	**2**	*3*
5:15 PM	**1**	**0**	**1**	**0**	***2***	**0**	**1**	**0**	**0**	***1***	**3**	**0**	**1**	**3**	***7***
5:30 PM	2	1	0	0	*3*	0	1	0	0	*1*	0	0	2	3	*5*
5:45 PM	4	1	2	0	*7*	0	1	0	0	*1*	2	0	2	2	*6*
Count Total	13	13	24	2	*52*	1	4	0	1	*6*	10	0	20	16	*46*
Peak Hour	**5**	**7**	**6**	**1**	***19***	**1**	**2**	**0**	**0**	***3***	**7**	**0**	**13**	**8**	***28***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Castro Valley Blvd Eastbound				Castro Valley Blvd Westbound				Stanton Ave Northbound				Stanton Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	0	0	0	2	0	0	8	1	0	0	0	0	0	12	0
4:15 PM	0	1	0	0	0	0	2	0	0	7	0	0	0	0	0	1	11	0
4:30 PM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	0
4:45 PM	**0**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**1**	**6**	33
5:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	28
5:15 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**19**
5:30 PM	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	3	18
5:45 PM	0	0	4	0	0	0	1	0	0	2	0	0	0	0	0	0	7	19
Count Total	0	2	11	0	0	0	13	0	0	22	2	0	0	0	0	2	52	0
Peak Hour	**0**	**0**	**5**	**0**	**0**	**0**	**7**	**0**	**0**	**5**	**1**	**0**	**0**	**0**	**0**	**1**	**19**	**0**

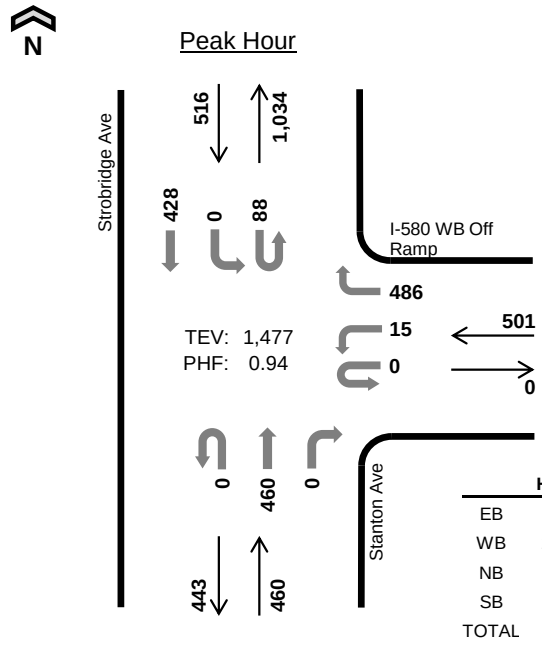
Two-Hour Count Summaries - Bikes

Interval Start	Castro Valley Blvd Eastbound			Castro Valley Blvd Westbound			Stanton Ave Northbound			Stanton Ave Southbound			15-min Total	Rolling One Hour
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0
4:30 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2
5:00 PM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	3
5:15 PM	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	3
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	4
Count Total	0	1	0	0	4	0	0	0	0	0	0	1	6	0
Peak Hour	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**

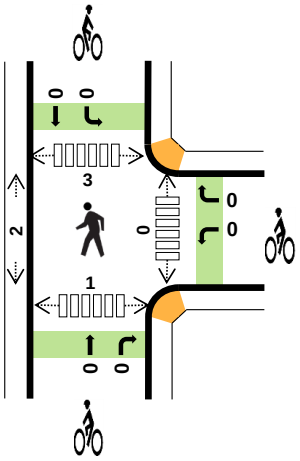
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Stanton Ave
I-580 WB Off Ramp

Date: 03-21-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	2.4%	0.90
NB	1.1%	0.89
SB	1.0%	0.85
TOTAL	1.5%	0.94



Two-Hour Count Summaries

Interval Start	0 Eastbound				I-580 WB Off Ramp Westbound				Stanton Ave Northbound				Strobridge Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	66	0	0	67	0	13	0	61	0	207	0
7:15 AM	0	0	0	0	0	3	0	80	0	0	67	0	15	0	92	0	257	0
7:30 AM	0	0	0	0	0	3	0	108	0	0	74	0	21	0	110	0	316	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**134**	**0**	**0**	**122**	**0**	**23**	**0**	**103**	**0**	**387**	1,167
8:00 AM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**109**	**0**	**0**	**129**	**0**	**21**	**0**	**130**	**0**	**392**	1,352
8:15 AM	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**125**	**0**	**0**	**105**	**0**	**22**	**0**	**114**	**0**	**370**	1,465
8:30 AM	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**118**	**0**	**0**	**104**	**0**	**22**	**0**	**81**	**0**	**328**	**1,477**
8:45 AM	0	0	0	0	0	4	0	124	0	0	71	0	21	0	86	0	306	1,396
Count Total	0	0	0	0	0	25	0	864	0	0	739	0	158	0	777	0	2,563	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**486**	**0**	**0**	**460**	**0**	**88**	**0**	**428**	**0**	**1,477**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**5**	**0**	**1**	**0**	**4**	**0**	**22**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**13%**	**-**	**2%**	**-**	**-**	**1%**	**-**	**1%**	**-**	**1%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	2	2	1	*5*	0	0	0	0	*0*	0	1	0	0	*1*
7:15 AM	0	1	1	2	*4*	0	0	0	0	*0*	0	2	1	0	*3*
7:30 AM	0	0	1	1	*2*	0	0	0	0	*0*	0	0	1	1	*2*
7:45 AM	**0**	**3**	**1**	**2**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**1**	*2*
8:00 AM	**0**	**3**	**2**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:15 AM	**0**	**5**	**1**	**2**	***8***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
8:30 AM	**0**	**1**	**1**	**0**	***2***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**3**	**0**	***4***
8:45 AM	0	2	0	2	*4*	0	0	0	0	*0*	0	1	1	0	*2*
Count Total	0	17	9	11	*37*	0	0	0	0	*0*	0	6	6	2	*14*
Peak Hr	**0**	**12**	**5**	**5**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**3**	**1**	***6***

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	0				I-580 WB Off Ramp				Stanton Ave				Strobridge Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	2	0	0	2	0	0	0	1	0	5	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	4	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**1**	**0**	**1**	**0**	**1**	**0**	**6**	17
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**6**	18
8:15 AM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**3**	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**8**	22
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**22**
8:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	4	20
Count Total	0	0	0	0	0	2	0	15	0	0	9	0	4	0	7	0	37	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**10**	**0**	**0**	**5**	**0**	**1**	**0**	**4**	**0**	**22**	**0**

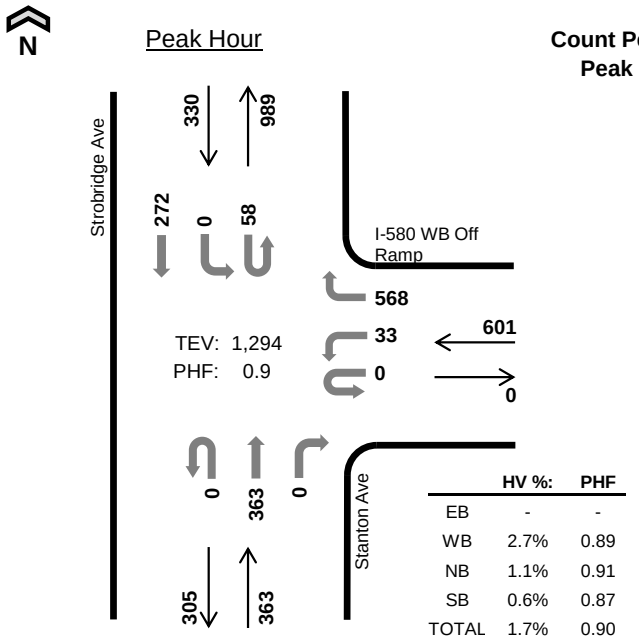
Two-Hour Count Summaries - Bikes

Interval Start	0			I-580 WB Off Ramp			Stanton Ave			Strobridge Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

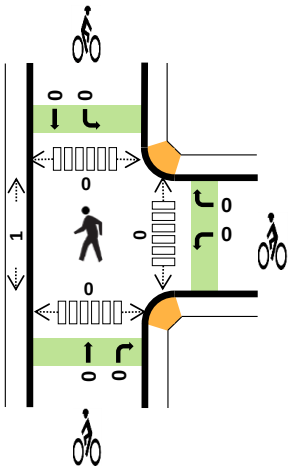
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Stanton Ave
I-580 WB Off Ramp

Date: 03-21-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	-	-
WB	2.7%	0.89
NB	1.1%	0.91
SB	0.6%	0.87
TOTAL	1.7%	0.90



Two-Hour Count Summaries

Interval Start	0 Eastbound				I-580 WB Off Ramp Westbound				Stanton Ave Northbound				Strobridge Ave Southbound				15-min Total	Rolling One Hour
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**164**	**0**	**0**	**95**	**0**	**18**	**0**	**77**	**0**	**359**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**12**	**0**	**144**	**0**	**0**	**100**	**0**	**12**	**0**	**65**	**0**	**333**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**120**	**0**	**0**	**98**	**0**	**11**	**0**	**75**	**0**	**314**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**140**	**0**	**0**	**70**	**0**	**17**	**0**	**55**	**0**	**288**	**1,294**
5:00 PM	0	0	0	0	0	8	0	130	0	0	92	0	17	0	82	0	329	1,264
5:15 PM	0	0	0	0	0	8	0	154	0	0	95	0	11	0	67	0	335	1,266
5:30 PM	0	0	0	0	0	5	0	98	0	0	88	0	18	0	96	0	305	1,257
5:45 PM	0	0	0	0	0	11	0	99	0	0	104	0	11	0	97	0	322	1,291
Count Total	0	0	0	0	0	65	0	1,049	0	0	742	0	115	0	614	0	2,585	0
Peak Hour All	**0**	**0**	**0**	**0**	**0**	**33**	**0**	**568**	**0**	**0**	**363**	**0**	**58**	**0**	**272**	**0**	**1,294**	**0**
Peak Hour HV	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**14**	**0**	**0**	**4**	**0**	**1**	**0**	**1**	**0**	**22**	**0**
Peak Hour HV%	**-**	**-**	**-**	**-**	**-**	**6%**	**-**	**2%**	**-**	**-**	**1%**	**-**	**2%**	**-**	**0%**	**-**	**2%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	**0**	**6**	**3**	**0**	***9***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:15 PM	**0**	**5**	**0**	**1**	***6***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:30 PM	**0**	**3**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	*0*
4:45 PM	**0**	**2**	**0**	**1**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***
5:00 PM	0	1	0	2	*3*	0	0	0	0	*0*	0	1	1	1	*3*
5:15 PM	0	2	0	0	*2*	0	0	0	0	*0*	0	2	2	0	*4*
5:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	2	1	0	*3*
Count Total	0	20	4	4	*28*	0	0	0	0	*0*	0	6	4	1	*11*
Peak Hr	**0**	**16**	**4**	**2**	***22***	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	***1***

Two-Hour Count Summaries - Heavy Vehicles

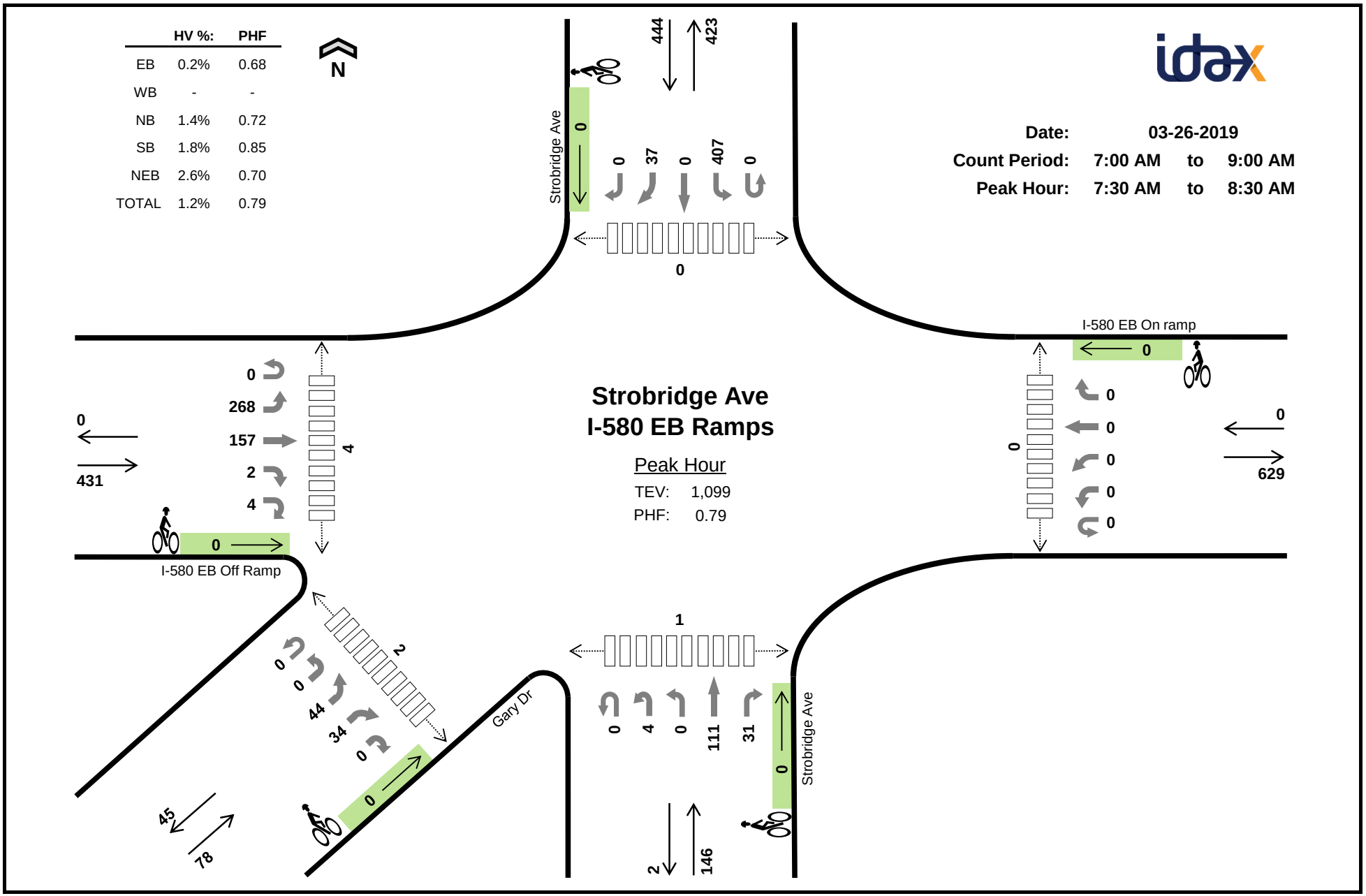
Interval Start	0				I-580 WB Off Ramp				Stanton Ave				Strobridge Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**9**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**6**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**3**	**22**
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	3	16
5:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	12
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	9
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Count Total	0	0	0	0	0	2	0	18	0	0	4	0	1	0	3	0	28	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**14**	**0**	**0**	**4**	**0**	**1**	**0**	**1**	**0**	**22**	**0**

Two-Hour Count Summaries - Bikes

Interval Start	0			I-580 WB Off Ramp			Stanton Ave			Strobridge Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

	HV %:	PHF
EB	0.2%	0.68
WB	-	-
NB	1.4%	0.72
SB	1.8%	0.85
NEB	2.6%	0.70
TOTAL	1.2%	0.79



Date: 03-26-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM

Two-Hour Count Summaries

Interval Start		I-580 EB Off Ramp					I-580 EB On ramp					Strobridge Ave					Strobridge Ave					Gary Dr					15-min Total	Rolling One Hour
		Eastbound					Westbound					Northbound					Southbound					Northeastbound						
		UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM		0	35	0	0	1	0	0	0	0	0	0	0	0	24	5	0	70	0	4	0	0	0	10	10	0	159	0
7:15 AM		0	41	0	0	1	0	0	0	0	0	0	0	0	20	9	0	77	0	4	0	0	0	11	14	0	177	0
7:30 AM		**0**	**50**	**5**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24**	**12**	**0**	**120**	**0**	**10**	**0**	**0**	**0**	**9**	**9**	**0**	**241**	0
7:45 AM		**0**	**82**	**74**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**44**	**6**	**0**	**103**	**0**	**8**	**0**	**0**	**0**	**17**	**11**	**0**	**348**	925
8:00 AM		**0**	**76**	**34**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**20**	**6**	**0**	**89**	**0**	**11**	**0**	**0**	**0**	**9**	**12**	**0**	**261**	1,027
8:15 AM		**0**	**60**	**44**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**23**	**7**	**0**	**95**	**0**	**8**	**0**	**0**	**0**	**9**	**2**	**0**	**249**	**1,099**
8:30 AM		0	47	4	1	0	0	0	0	0	0	0	0	0	12	2	0	62	0	6	0	0	0	10	5	0	149	1,007
8:45 AM		0	39	0	0	0	0	0	0	0	0	0	1	0	15	5	0	73	0	11	0	0	0	6	5	0	155	814
Count Total		0	430	161	3	6	0	0	0	0	0	0	5	0	182	52	0	689	0	62	0	0	0	81	68	0	1,739	0
Peak Hour	**All**	**0**	**268**	**157**	**2**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**111**	**31**	**0**	**407**	**0**	**37**	**0**	**0**	**0**	**44**	**34**	**0**	**1,099**	**0**
	HV	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**6**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**13**	**0**
	HV%	**-**	**0%**	**0%**	**0%**	**0%**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**-**	**2%**	**0%**	**-**	**1%**	**-**	**5%**	**-**	**-**	**-**	**5%**	**0%**	**-**	**1%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
7:00 AM	1	0	1	1	0	*3*	0	0	0	0	0	*0*	0	2	0	0	1	*3*
7:15 AM	0	0	2	1	0	*3*	0	0	0	0	0	*0*	0	1	0	0	1	*2*
7:30 AM	**0**	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**0**	**1**	***2***
7:45 AM	**1**	**0**	**1**	**0**	**0**	***2***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**1**	**0**	**1**	**0**	***2***
8:00 AM	**0**	**0**	**0**	**3**	**1**	***4***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	**1**	***3***
8:15 AM	**0**	**0**	**1**	**2**	**0**	***3***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***
8:30 AM	1	0	0	0	0	*1*	0	0	0	0	1	*1*	1	1	0	0	0	*2*
8:45 AM	0	0	0	2	0	*2*	0	0	0	0	0	*0*	0	2	0	0	1	*3*
Count Total	3	0	5	12	2	*22*	0	0	0	0	1	*1*	1	10	0	1	5	*17*
Peak Hr	**1**	**0**	**2**	**8**	**2**	***13***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**4**	**0**	**1**	**2**	*7*

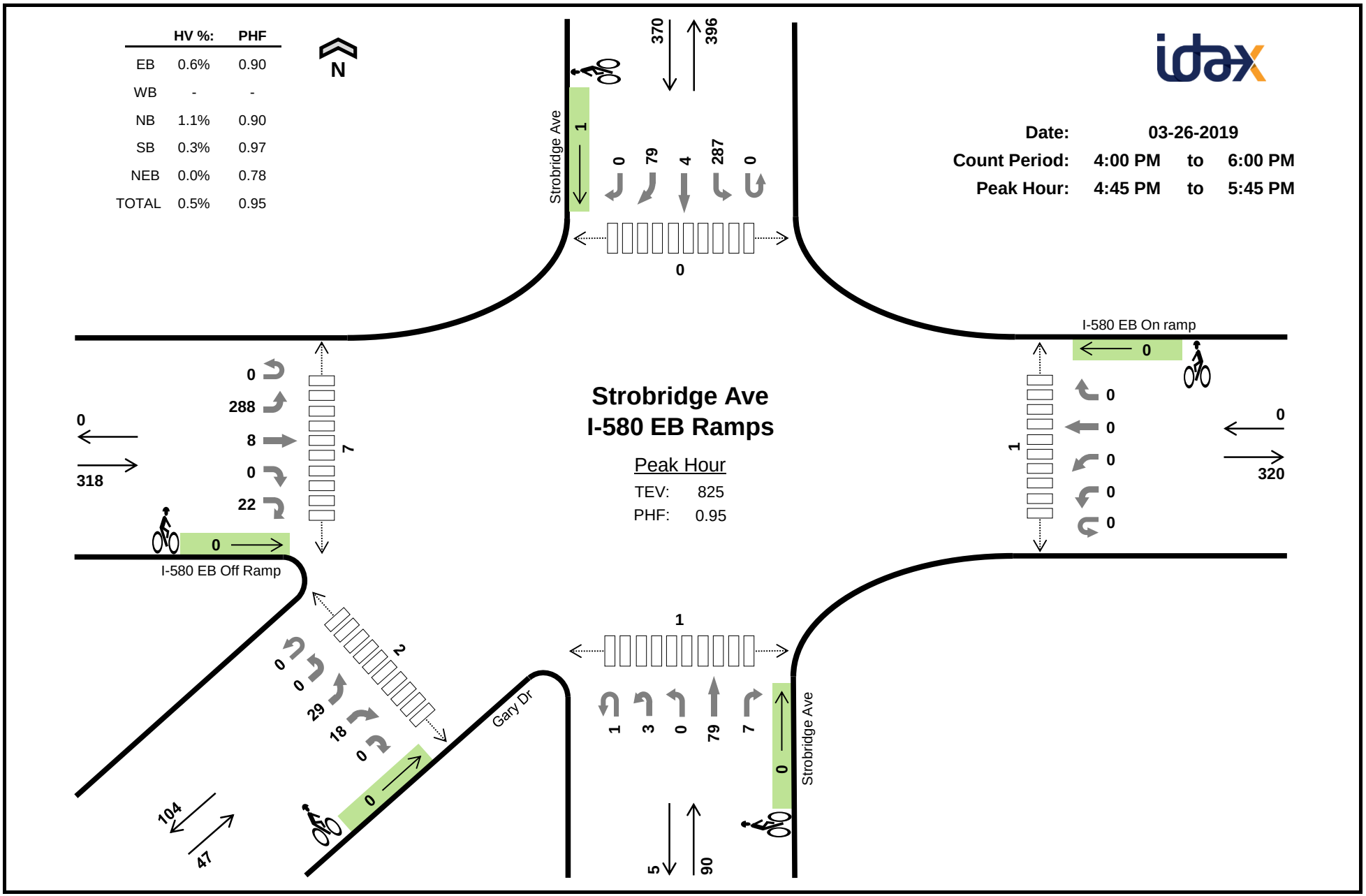
Two-Hour Count Summaries - Heavy Vehicles

Interval Start	I-580 EB Off Ramp					I-580 EB On ramp					Strobridge Ave					Strobridge Ave					Gary Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northeastbound						
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	3	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	0
7:45 AM	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	12
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**4**	13
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**13**
8:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	10
Count Total	0	3	0	0	0	0	0	0	0	0	0	0	0	4	1	0	8	0	4	0	0	0	2	0	0	22	0
Peak Hour	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**6**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	13	**0**

Two-Hour Count Summaries - Bikes

Interval Start	I-580 EB Off Ramp					I-580 EB On ramp					Strobridge Ave					Strobridge Ave					Gary Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northeastbound						
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**0**

	HV %:	PHF
EB	0.6%	0.90
WB	-	-
NB	1.1%	0.90
SB	0.3%	0.97
NEB	0.0%	0.78
TOTAL	0.5%	0.95



Date: 03-26-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:45 PM to 5:45 PM

Two-Hour Count Summaries

Interval Start		I-580 EB Off Ramp					I-580 EB On ramp					Strobridge Ave					Strobridge Ave					Gary Dr					15-min Total	Rolling One Hour
		Eastbound					Westbound					Northbound					Southbound					Northeastbound						
		UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM		0	49	0	0	2	0	0	0	0	0	0	0	0	25	0	0	66	0	14	0	0	0	11	5	0	172	0
4:15 PM		0	66	0	0	1	0	0	0	0	0	0	0	0	10	1	0	64	0	26	0	0	0	9	1	0	178	0
4:30 PM		0	63	4	0	3	0	0	0	0	0	0	0	0	25	3	0	66	0	14	0	0	0	9	4	0	191	0
4:45 PM		**0**	**64**	**3**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**3**	**0**	**64**	**2**	**28**	**0**	**0**	**0**	**4**	**3**	**0**	**193**	734
5:00 PM		**0**	**70**	**4**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**21**	**1**	**0**	**79**	**0**	**16**	**0**	**0**	**0**	**8**	**4**	**0**	**210**	772
5:15 PM		**0**	**84**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**23**	**0**	**0**	**73**	**2**	**15**	**0**	**0**	**0**	**9**	**4**	**0**	**216**	810
5:30 PM		**0**	**70**	**1**	**0**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**19**	**3**	**0**	**71**	**0**	**20**	**0**	**0**	**0**	**8**	**7**	**0**	**206**	**825**
5:45 PM		0	65	0	0	5	0	0	0	0	0	0	1	0	18	0	0	68	0	23	0	0	0	8	2	0	190	822
Count Total		0	531	12	0	33	0	0	0	0	0	1	4	0	157	11	0	551	4	156	0	0	0	66	30	0	1,556	0
Peak Hour	**All**	**0**	**288**	**8**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**0**	**79**	**7**	**0**	**287**	**4**	**79**	**0**	**0**	**0**	**29**	**18**	**0**	**825**	**0**
	HV	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**
	HV%	**-**	**1%**	**0%**	**-**	**0%**	**-**	**-**	**-**	**-**	**-**	**0%**	**0%**	**-**	**1%**	**0%**	**-**	**0%**	**0%**	**0%**	**-**	**-**	**-**	**0%**	**0%**	**-**	**0%**	**0**

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
4:00 PM	0	0	0	1	1	*2*	0	0	0	0	0	*0*	0	0	0	0	0	*0*
4:15 PM	0	0	0	0	0	*0*	0	0	0	0	0	*0*	0	0	0	1	0	*1*
4:30 PM	0	0	0	1	0	*1*	0	0	0	0	0	*0*	0	5	0	0	2	*7*
4:45 PM	**2**	**0**	**1**	**1**	**0**	***4***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**3**	**0**	**1**	**2**	***6***
5:00 PM	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**2**	**0**	**0**	**0**	***2***
5:15 PM	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**1**	**0**	***1***	**0**	**2**	**0**	**0**	**0**	***2***
5:30 PM	**0**	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	***0***	**1**	**0**	**0**	**0**	**0**	***1***
5:45 PM	0	0	0	0	0	*0*	0	0	0	1	0	*1*	0	3	0	1	0	*4*
Count Total	2	0	1	3	1	*7*	0	0	0	2	0	*2*	1	15	0	3	4	*23*
Peak Hr	**2**	**0**	**1**	**1**	**0**	***4***	**0**	**0**	**0**	**1**	**0**	***1***	**1**	**7**	**0**	**1**	**2**	*11*

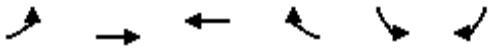
Two-Hour Count Summaries - Heavy Vehicles

Interval Start	I-580 EB Off Ramp					I-580 EB On ramp					Strobridge Ave					Strobridge Ave					Gary Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northeastbound						
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
4:45 PM	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	7
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	5
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	5
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0	0	0	0	1	0	0	7	0
Peak Hour	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	4	**0**

Two-Hour Count Summaries - Bikes

Interval Start	I-580 EB Off Ramp					I-580 EB On ramp					Strobridge Ave					Strobridge Ave					Gary Dr					15-min Total	Rolling One Hour
	Eastbound					Westbound					Northbound					Southbound					Northeastbound						
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
5:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	1
5:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2	0
Peak Hour	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	1	**0**

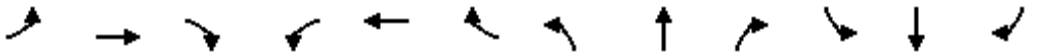
Appendix B – Existing Conditions Level of Service Worksheets



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	297	330	3	3	2
Future Volume (Veh/h)	3	297	330	3	3	2
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)	3	323	359	3	3	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	362				528	360
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362				528	360
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	100
cM capacity (veh/h)	1193				479	636

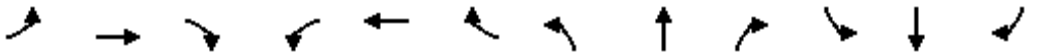
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	111	215	362	5
Volume Left	3	0	0	3
Volume Right	0	0	3	2
cSH	1193	1700	1700	531
Volume to Capacity	0.00	0.13	0.21	0.01
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.2	0.0	0.0	11.8
Lane LOS	A			B
Approach Delay (s)	0.1		0.0	11.8
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		



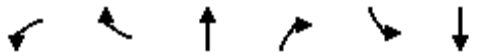
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	802	97	308	1451	233	0	0	0	102	87	111
Future Volume (vph)	102	802	97	308	1451	233	0	0	0	102	87	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Frt	1.00	0.98		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1770	4993		1787	5015						1823	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1770	4993		1787	5015						1823	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.94	0.94	0.94	0.25	0.25	0.25	0.85	0.85	0.85
Adj. Flow (vph)	112	881	107	328	1544	248	0	0	0	120	102	131
RTOR Reduction (vph)	0	23	0	0	33	0	0	0	0	0	0	64
Lane Group Flow (vph)	112	965	0	328	1759	0	0	0	0	0	222	67
Confl. Peds. (#/hr)			6	6					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	5.4	18.4		14.4	27.4						18.1	23.5
Effective Green, g (s)	5.4	18.4		14.4	27.4						18.1	23.5
Actuated g/C Ratio	0.08	0.29		0.22	0.43						0.28	0.36
Clearance Time (s)	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
Lane Grp Cap (vph)	148	1426		399	2133						512	695
v/s Ratio Prot	0.06	0.19		c0.18	c0.35							0.01
v/s Ratio Perm											0.12	0.03
v/c Ratio	0.76	0.68		0.82	0.82						0.43	0.10
Uniform Delay, d1	28.9	20.4		23.8	16.4						19.0	13.5
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	19.6	1.3		12.8	2.7						2.7	0.1
Delay (s)	48.4	21.7		36.6	19.1						21.6	13.5
Level of Service	D	C		D	B						C	B
Approach Delay (s)		24.4			21.8			0.0			18.6	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	13.5
Intersection Capacity Utilization	67.0%	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)	176	717	0	0	1076	37	500	176	455	87	0	431
Future Volume (vph)	176	717	0	0	1076	37	500	176	455	87	0	431
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.97	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5107		1698	1745	1555	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5107		1698	1745	1555	1805		1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	207	844	0	0	1133	39	515	181	469	95	0	468
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	224	0	0	133
Lane Group Flow (vph)	207	844	0	0	1167	0	345	351	245	95	0	335
Confl. Peds. (#/hr)	3		12	12		3			11	11		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	5.9	29.6			19.2		18.9	18.9	18.9	18.0		18.0
Effective Green, g (s)	5.9	29.6			19.2		18.9	18.9	18.9	18.0		18.0
Actuated g/C Ratio	0.07	0.37			0.24		0.24	0.24	0.24	0.22		0.22
Clearance Time (s)	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
Lane Grp Cap (vph)	253	1309			1225		401	412	367	406		363
v/s Ratio Prot	0.06	c0.24			c0.23		c0.20	0.20		0.05		
v/s Ratio Perm									0.16			c0.21
v/c Ratio	0.82	0.64			0.95		0.86	0.85	0.67	0.23		0.92
Uniform Delay, d1	36.5	20.9			30.0		29.3	29.2	27.7	25.4		30.3
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	18.2	1.1			15.7		20.8	19.5	9.3	1.3		31.1
Delay (s)	54.7	22.0			45.7		50.1	48.7	37.0	26.7		61.4
Level of Service	D	C			D		D	D	D	C		E
Approach Delay (s)		28.4			45.7			44.4			55.6	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	42.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	486	460	0	0	428
Future Volume (Veh/h)	15	486	460	0	0	428
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.92	0.89	0.89	1.00	0.85
Hourly flow rate (vph)	17	528	517	0	0	504
Pedestrians			1			3
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	770	262			517	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	770	262			517	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	28			100	
cM capacity (veh/h)	337	735			1052	

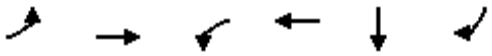
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	17	528	258	258	252	252
Volume Left	17	0	0	0	0	0
Volume Right	0	528	0	0	0	0
cSH	337	735	1700	1700	1700	1700
Volume to Capacity	0.05	0.72	0.15	0.15	0.15	0.15
Queue Length 95th (ft)	4	154	0	0	0	0
Control Delay (s)	16.3	21.4	0.0	0.0	0.0	0.0
Lane LOS	C	C				
Approach Delay (s)	21.2		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	268	157	6	4	111	31	407	37	44	34
Future Volume (vph)	268	157	6	4	111	31	407	37	44	34
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		0.91	1.00		1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.85	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1805	1888		1633	1820		1770	1583	1688	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1805	1888		1633	1820		1770	1583	1688	
Peak-hour factor, PHF	0.68	0.68	0.68	0.72	0.72	0.72	0.92	0.92	0.70	0.70
Adj. Flow (vph)	394	231	9	6	154	43	442	40	63	49
RTOR Reduction (vph)	0	0	0	0	10	0	0	0	0	0
Lane Group Flow (vph)	394	240	0	6	187	0	442	40	112	0
Confl. Peds. (#/hr)			2	2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
Turn Type	Split	NA		Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7		1			5		8	
Permitted Phases					6			2		
Actuated Green, G (s)	21.9	21.9		0.9	17.7		23.9	40.7	9.4	
Effective Green, g (s)	21.9	21.9		0.9	17.7		23.9	40.7	9.4	
Actuated g/C Ratio	0.24	0.24		0.01	0.19		0.26	0.45	0.10	
Clearance Time (s)	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	
Lane Grp Cap (vph)	434	454		16	354		465	708	174	
v/s Ratio Prot	c0.22	0.13		0.00			c0.25		c0.07	
v/s Ratio Perm					c0.10			0.03		
v/c Ratio	0.91	0.53		0.38	0.53		0.95	0.06	0.64	
Uniform Delay, d1	33.5	30.0		44.7	32.9		32.9	14.2	39.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	22.3	1.1		14.1	1.4		29.5	0.0	7.9	
Delay (s)	55.8	31.1		58.9	34.3		62.4	14.3	47.0	
Level of Service	E	C		E	C		E	B	D	
Approach Delay (s)		46.5			35.0				47.0	
Approach LOS		D			D				D	

Intersection Summary			
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		

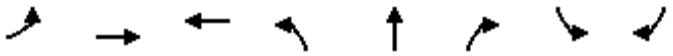
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	112	988	328	1792	222	131
v/c Ratio	0.60	0.71	0.81	0.81	0.43	0.17
Control Delay	43.1	23.5	40.7	20.0	22.2	4.4
Queue Delay	0.0	0.0	1.6	40.6	0.0	0.0
Total Delay	43.1	23.5	42.2	60.6	22.2	4.4
Queue Length 50th (ft)	43	123	122	221	72	6
Queue Length 95th (ft)	#105	166	#239	283	120	29
Internal Link Dist (ft)		507		194	116	
Turn Bay Length (ft)	325					
Base Capacity (vph)	193	1452	438	2199	520	798
Starvation Cap Reductn	0	0	30	546	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.68	0.80	1.08	0.43	0.16

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	207	844	1172	345	351	469	95	468
v/c Ratio	0.82	0.64	0.95	0.86	0.85	0.79	0.23	0.94
Control Delay	63.1	23.6	47.6	52.1	50.6	22.3	27.2	50.1
Queue Delay	0.0	30.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.1	54.2	47.6	52.1	50.6	22.3	27.2	50.1
Queue Length 50th (ft)	53	179	210	174	176	79	39	152
Queue Length 95th (ft)	#100	223	#302	#327	#329	#238	79	#339
Internal Link Dist (ft)		194	370		202			
Turn Bay Length (ft)							45	
Base Capacity (vph)	253	1309	1230	401	412	591	406	496
Starvation Cap Reductn	0	503	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	1.05	0.95	0.86	0.85	0.79	0.23	0.94

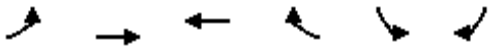
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	NBL2	NBT	SBL	SBR	NEL
Lane Group Flow (vph)	394	240	6	197	442	40	112
v/c Ratio	0.86	0.50	0.06	0.65	0.90	0.05	0.51
Control Delay	53.7	34.6	44.2	43.7	56.7	15.9	45.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	34.6	44.2	43.7	56.7	15.9	45.3
Queue Length 50th (ft)	213	116	3	98	241	11	59
Queue Length 95th (ft)	#263	154	14	135	#492	38	88
Internal Link Dist (ft)		356		181			235
Turn Bay Length (ft)							
Base Capacity (vph)	457	478	105	416	490	750	358
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	0.50	0.06	0.47	0.90	0.05	0.31

Intersection Summary

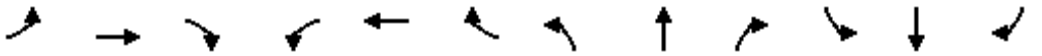
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	282	384	3	9	9
Future Volume (Veh/h)	3	282	384	3	9	9
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)	3	307	417	3	10	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	420				578	418
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	420				578	418
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	98
cM capacity (veh/h)	1136				445	583

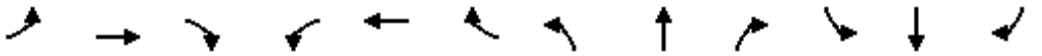
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	105	205	420	20
Volume Left	3	0	0	10
Volume Right	0	0	3	10
cSH	1136	1700	1700	505
Volume to Capacity	0.00	0.12	0.25	0.04
Queue Length 95th (ft)	0	0	0	3
Control Delay (s)	0.3	0.0	0.0	12.4
Lane LOS	A			B
Approach Delay (s)	0.1		0.0	12.4
Approach LOS				B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		



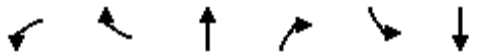
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	1114	96	188	1434	238	0	0	0	126	72	93
Future Volume (vph)	151	1114	96	188	1434	238	0	0	0	126	72	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						0.99	1.00
Frt	1.00	0.99		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1805	5118		1787	5011						1813	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1805	5118		1787	5011						1813	1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	156	1148	99	196	1494	248	0	0	0	137	78	101
RTOR Reduction (vph)	0	15	0	0	35	0	0	0	0	0	0	14
Lane Group Flow (vph)	156	1232	0	196	1707	0	0	0	0	0	215	87
Confl. Peds. (#/hr)			4	4					8	8		
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	7.5	20.9		10.1	23.5						20.5	28.0
Effective Green, g (s)	7.5	20.9		10.1	23.5						20.5	28.0
Actuated g/C Ratio	0.12	0.32		0.16	0.36						0.32	0.43
Clearance Time (s)	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
Lane Grp Cap (vph)	208	1645		277	1811						571	799
v/s Ratio Prot	0.09	0.24		c0.11	c0.34							0.01
v/s Ratio Perm											0.12	0.04
v/c Ratio	0.75	0.75		0.71	0.94						0.38	0.11
Uniform Delay, d1	27.8	19.7		26.0	20.1						17.3	11.0
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	14.1	1.9		8.0	10.5						1.9	0.1
Delay (s)	41.9	21.6		34.1	30.6						19.2	11.1
Level of Service	D	C		C	C						B	B
Approach Delay (s)		23.9			30.9			0.0			16.6	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	70.1%	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)	285	928	0	0	911	17	572	218	357	70	0	408
Future Volume (vph)	285	928	0	0	911	17	572	218	357	70	0	408
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.98	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3502	3610			5118		1698	1747	1563	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3502	3610			5118		1698	1747	1563	1805		1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	294	957	0	0	1059	20	590	225	368	80	0	469
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	202	0	0	165
Lane Group Flow (vph)	294	957	0	0	1077	0	401	414	167	80	0	304
Confl. Peds. (#/hr)	13		8	8		13			7	7		
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	8.7	33.0			19.8		25.0	25.0	25.0	18.5		18.5
Effective Green, g (s)	8.7	33.0			19.8		25.0	25.0	25.0	18.5		18.5
Actuated g/C Ratio	0.10	0.37			0.22		0.28	0.28	0.28	0.21		0.21
Clearance Time (s)	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
Lane Grp Cap (vph)	338	1323			1125		471	485	434	371		331
v/s Ratio Prot	0.08	c0.27			c0.21		0.24	c0.24		0.04		
v/s Ratio Perm									0.11			c0.19
v/c Ratio	0.87	0.72			0.96		0.85	0.85	0.38	0.22		0.92
Uniform Delay, d1	40.1	24.6			34.7		30.7	30.8	26.3	29.7		35.0
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	20.5	2.0			17.3		17.4	17.2	2.6	1.3		32.4
Delay (s)	60.6	26.6			52.0		48.1	47.9	28.8	31.0		67.4
Level of Service	E	C			D		D	D	C	C		E
Approach Delay (s)		34.5			52.0			42.1			62.1	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



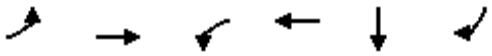
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	33	568	363	0	0	272
Future Volume (Veh/h)	33	568	363	0	0	272
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.87	0.87
Hourly flow rate (vph)	37	638	399	0	0	313
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	556	200			399	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	556	200			399	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	21			100	
cM capacity (veh/h)	459	805			1163	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	37	638	200	200	156	156
Volume Left	37	0	0	0	0	0
Volume Right	0	638	0	0	0	0
cSH	459	805	1700	1700	1700	1700
Volume to Capacity	0.08	0.79	0.12	0.12	0.09	0.09
Queue Length 95th (ft)	7	206	0	0	0	0
Control Delay (s)	13.5	24.2	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	23.6		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	288	8	22	4	79	7	287	79	29	18
Future Volume (vph)	288	8	22	4	79	7	287	79	29	18
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.97	0.99	
Flpb, ped/bikes	1.00	1.00		0.92	1.00		1.00	1.00	1.00	
Frt	1.00	0.89		1.00	0.99		1.00	0.85	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1787	1646		1648	1855		1805	1574	1739	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1787	1646		1648	1855		1805	1574	1739	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.97	0.97	0.78	0.78
Adj. Flow (vph)	320	9	24	4	88	8	296	81	37	23
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0
Lane Group Flow (vph)	320	33	0	4	92	0	296	81	60	0
Confl. Peds. (#/hr)			2	2		1	1	2		1
Confl. Bikes (#/hr)								1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%
Turn Type	Split	NA		Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7		1			5		8	
Permitted Phases					6			2		
Actuated Green, G (s)	17.1	17.1		0.9	10.4		18.2	27.7	18.2	
Effective Green, g (s)	17.1	17.1		0.9	10.4		18.2	27.7	18.2	
Actuated g/C Ratio	0.21	0.21		0.01	0.13		0.22	0.34	0.22	
Clearance Time (s)	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	
Lane Grp Cap (vph)	373	343		18	235		401	532	386	
v/s Ratio Prot	c0.18	0.02		0.00			c0.16		c0.03	
v/s Ratio Perm					c0.05			0.05		
v/c Ratio	0.86	0.10		0.22	0.39		0.74	0.15	0.16	
Uniform Delay, d1	31.2	26.2		40.2	32.8		29.6	18.9	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	17.4	0.1		6.2	1.1		11.5	0.1	0.9	
Delay (s)	48.6	26.3		46.3	33.9		41.2	19.0	26.5	
Level of Service	D	C		D	C		D	B	C	
Approach Delay (s)		46.5			34.4				26.5	
Approach LOS		D			C				C	

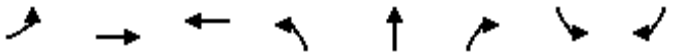
Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	156	1247	196	1742	215	101
v/c Ratio	0.75	0.75	0.70	0.94	0.38	0.12
Control Delay	52.6	23.0	41.2	32.1	19.7	7.3
Queue Delay	0.0	0.0	0.0	44.6	0.0	0.0
Total Delay	52.6	23.0	41.2	76.7	19.7	7.3
Queue Length 50th (ft)	61	158	74	232	65	15
Queue Length 95th (ft)	#147	207	#155	#338	118	37
Internal Link Dist (ft)		507		194	116	
Turn Bay Length (ft)	325					
Base Capacity (vph)	208	1657	294	1847	571	812
Starvation Cap Reductn	0	0	0	405	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.75	0.67	1.21	0.38	0.12

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	294	957	1079	401	414	368	80	469
v/c Ratio	0.87	0.72	0.96	0.85	0.85	0.58	0.22	0.94
Control Delay	66.4	28.4	53.7	49.6	49.4	11.4	31.6	49.9
Queue Delay	0.0	50.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	79.0	53.7	49.6	49.4	11.4	31.6	49.9
Queue Length 50th (ft)	86	243	222	226	233	39	38	155
Queue Length 95th (ft)	#157	314	#288	#392	#403	124	75	#324
Internal Link Dist (ft)		194	370		202			
Turn Bay Length (ft)							45	
Base Capacity (vph)	338	1323	1128	471	485	635	371	497
Starvation Cap Reductn	0	542	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.23	0.96	0.85	0.85	0.58	0.22	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	NBL2	NBT	SBL	SBR	NEL
Lane Group Flow (vph)	320	33	4	96	296	81	60
v/c Ratio	0.82	0.09	0.03	0.43	0.71	0.15	0.15
Control Delay	49.3	27.0	38.0	38.0	40.5	19.1	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.3	27.0	38.0	38.0	40.5	19.1	27.7
Queue Length 50th (ft)	155	13	2	44	141	26	25
Queue Length 95th (ft)	#306	38	12	89	#271	65	51
Internal Link Dist (ft)		356		181			235
Turn Bay Length (ft)							
Base Capacity (vph)	414	381	115	434	419	640	403
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	0.77	0.09	0.03	0.22	0.71	0.13	0.15

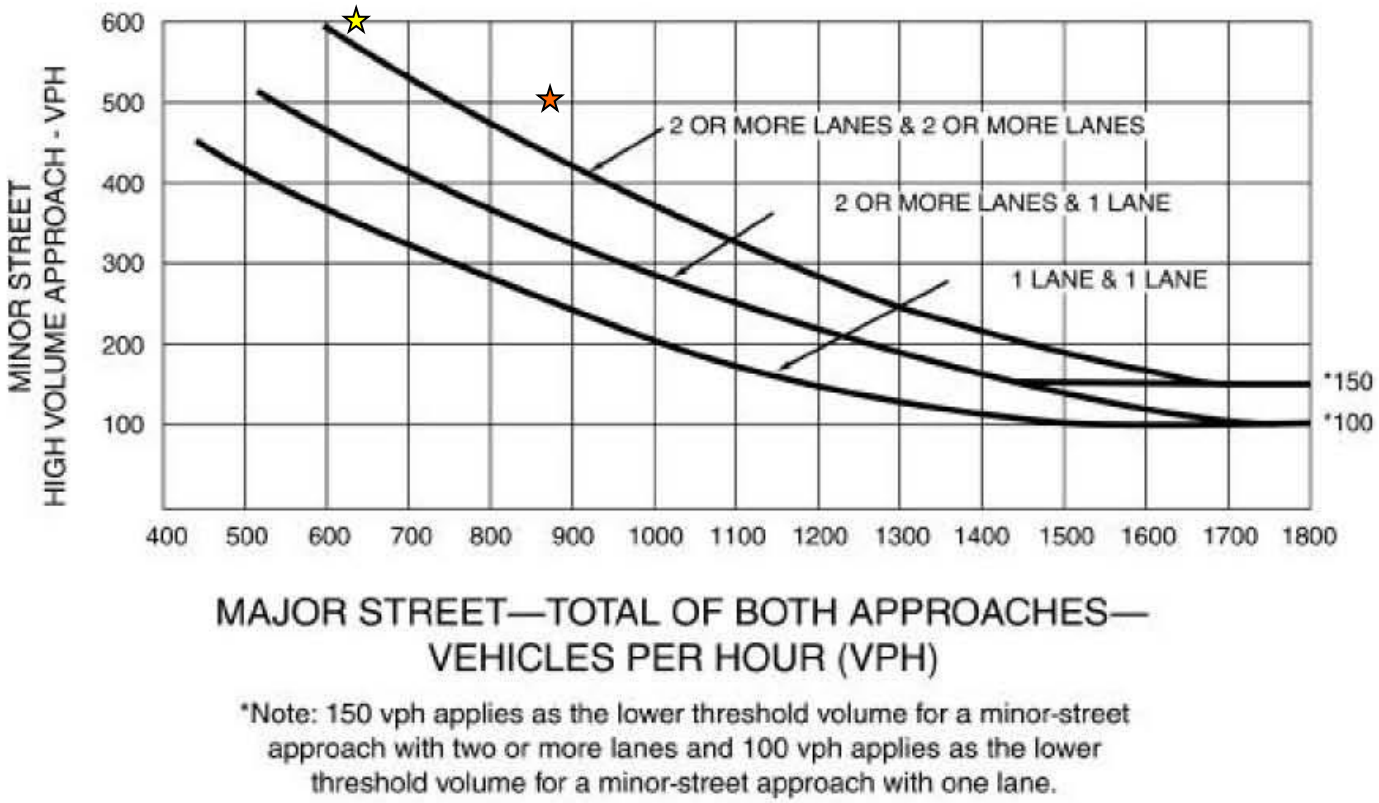
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Peak Hour Warrant (Urban Areas)

Intersection: Strobridge Avenue/Stanton Avenue & I-580 WB Off-Ramp, Alameda County, CA
Scenario: Existing Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Minor Street Volume = 501 (601) VPH

Major Street Volume = 888 (635) VPH

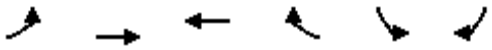
★ ***AM Peak Hour***

★ ***PM Peak Hour***

A signal IS WARRANTED in the a.m. Peak Hour
A signal IS WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

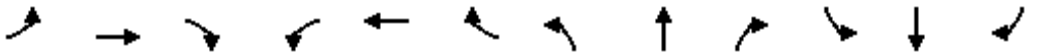
Appendix C – Existing plus Project Conditions Level of Service Worksheets



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	297	330	48	11	3
Future Volume (Veh/h)	8	297	330	48	11	3
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)	9	323	359	52	12	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	411				564	385
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	411				564	385
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	100
cM capacity (veh/h)	1144				452	613

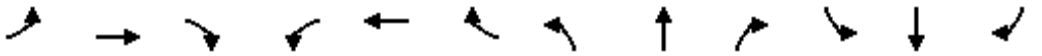
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	117	215	411	15
Volume Left	9	0	0	12
Volume Right	0	0	52	3
cSH	1144	1700	1700	477
Volume to Capacity	0.01	0.13	0.24	0.03
Queue Length 95th (ft)	1	0	0	2
Control Delay (s)	0.7	0.0	0.0	12.8
Lane LOS	A			B
Approach Delay (s)	0.2		0.0	12.8
Approach LOS				B

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	30.3%	ICU Level of Service	A
Analysis Period (min)	15		



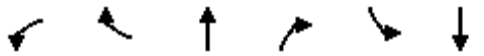
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	802	97	308	1451	258	0	0	0	105	89	114
Future Volume (vph)	122	802	97	308	1451	258	0	0	0	105	89	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Frt	1.00	0.98		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1770	4993		1787	5004						1823	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1770	4993		1787	5004						1823	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.94	0.94	0.94	0.25	0.25	0.25	0.85	0.85	0.85
Adj. Flow (vph)	134	881	107	328	1544	274	0	0	0	124	105	134
RTOR Reduction (vph)	0	23	0	0	39	0	0	0	0	0	0	61
Lane Group Flow (vph)	134	965	0	328	1779	0	0	0	0	0	229	73
Confl. Peds. (#/hr)			6	6					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	6.5	18.5		14.0	26.0						19.0	25.5
Effective Green, g (s)	6.5	18.5		14.0	26.0						19.0	25.5
Actuated g/C Ratio	0.10	0.28		0.22	0.40						0.29	0.39
Clearance Time (s)	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
Lane Grp Cap (vph)	177	1421		384	2001						532	738
v/s Ratio Prot	0.08	0.19		c0.18	c0.36							0.01
v/s Ratio Perm											0.13	0.04
v/c Ratio	0.76	0.68		0.85	0.89						0.43	0.10
Uniform Delay, d1	28.5	20.6		24.5	18.2						18.6	12.5
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	16.8	1.3		16.6	5.3						2.5	0.1
Delay (s)	45.2	21.9		41.2	23.4						21.2	12.5
Level of Service	D	C		D	C						C	B
Approach Delay (s)		24.7			26.1			0.0			18.0	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	24.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	13.5
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												
Traffic Volume (vph)	177	719	0	0	1086	37	510	176	455	87	0	436
Future Volume (vph)	177	719	0	0	1086	37	510	176	455	87	0	436
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.97	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5108		1698	1744	1555	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5108		1698	1744	1555	1805		1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	208	846	0	0	1143	39	526	181	469	95	0	474
RTOR Reduction (vph)	0	0	0	0	5	0	0	0	225	0	0	132
Lane Group Flow (vph)	208	846	0	0	1177	0	347	360	244	95	0	342
Confl. Peds. (#/hr)	3		12	12		3			11	11		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	5.9	29.7			19.3		18.7	18.7	18.7	18.1		18.1
Effective Green, g (s)	5.9	29.7			19.3		18.7	18.7	18.7	18.1		18.1
Actuated g/C Ratio	0.07	0.37			0.24		0.23	0.23	0.23	0.23		0.23
Clearance Time (s)	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
Lane Grp Cap (vph)	253	1313			1232		396	407	363	408		365
v/s Ratio Prot	0.06	c0.24			c0.23		0.20	c0.21		0.05		
v/s Ratio Perm									0.16			c0.21
v/c Ratio	0.82	0.64			0.96		0.88	0.88	0.67	0.23		0.94
Uniform Delay, d1	36.5	20.8			29.9		29.5	29.6	27.9	25.3		30.4
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	18.9	1.1			16.1		22.8	23.4	9.5	1.3		33.8
Delay (s)	55.5	21.9			46.0		52.4	53.0	37.4	26.6		64.2
Level of Service	E	C			D		D	D	D	C		E
Approach Delay (s)		28.5			46.0			46.6			57.9	
Approach LOS		C			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	496	460	0	0	430
Future Volume (Veh/h)	15	496	460	0	0	430
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.92	0.89	0.89	1.00	0.85
Hourly flow rate (vph)	17	539	517	0	0	506
Pedestrians			1			3
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	771	262			517	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	771	262			517	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	27			100	
cM capacity (veh/h)	336	735			1052	

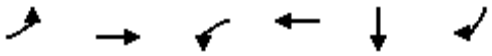
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	17	539	258	258	253	253
Volume Left	17	0	0	0	0	0
Volume Right	0	539	0	0	0	0
cSH	336	735	1700	1700	1700	1700
Volume to Capacity	0.05	0.73	0.15	0.15	0.15	0.15
Queue Length 95th (ft)	4	163	0	0	0	0
Control Delay (s)	16.3	22.1	0.0	0.0	0.0	0.0
Lane LOS	C	C				
Approach Delay (s)	21.9		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations											
Traffic Volume (vph)	268	157	2	4	4	111	31	409	37	44	34
Future Volume (vph)	268	157	2	4	4	111	31	409	37	44	34
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			0.91	1.00		1.00	1.00	1.00	
Frt	1.00	0.99			1.00	0.97		1.00	0.85	0.94	
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1805	1888			1633	1820		1770	1583	1688	
Flt Permitted	0.95	1.00			0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1805	1888			1633	1820		1770	1583	1688	
Peak-hour factor, PHF	0.68	0.68	0.68	0.68	0.72	0.72	0.72	0.92	0.92	0.70	0.70
Adj. Flow (vph)	394	231	3	6	6	154	43	445	40	63	49
RTOR Reduction (vph)	0	0	0	0	0	10	0	0	0	0	0
Lane Group Flow (vph)	394	240	0	0	6	187	0	445	40	112	0
Confl. Peds. (#/hr)				2	2						
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
Turn Type	Split	NA			Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7			1			5		8	
Permitted Phases						6			2		
Actuated Green, G (s)	21.0	21.0			0.9	17.7		24.9	41.7	9.4	
Effective Green, g (s)	21.0	21.0			0.9	17.7		24.9	41.7	9.4	
Actuated g/C Ratio	0.23	0.23			0.01	0.19		0.27	0.46	0.10	
Clearance Time (s)	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	
Lane Grp Cap (vph)	416	435			16	354		484	725	174	
v/s Ratio Prot	c0.22	0.13			0.00			c0.25		c0.07	
v/s Ratio Perm						c0.10			0.03		
v/c Ratio	0.95	0.55			0.38	0.53		0.92	0.06	0.64	
Uniform Delay, d1	34.5	30.9			44.8	32.9		32.1	13.7	39.2	
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	30.6	1.5			14.1	1.4		22.4	0.0	7.9	
Delay (s)	65.1	32.4			58.9	34.3		54.5	13.7	47.1	
Level of Service	E	C			E	C		D	B	D	
Approach Delay (s)		52.7				35.1				47.1	
Approach LOS		D				D				D	

Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

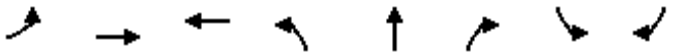
c Critical Lane Group



Lane Group	EBL	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	134	988	328	1818	229	134
v/c Ratio	0.76	0.68	0.85	0.89	0.43	0.17
Control Delay	57.6	23.0	47.3	24.8	21.7	4.3
Queue Delay	0.0	0.0	0.7	46.5	0.0	0.0
Total Delay	57.6	23.0	47.9	71.3	21.7	4.3
Queue Length 50th (ft)	53	123	124	229	73	7
Queue Length 95th (ft)	#135	166	#251	#331	121	30
Internal Link Dist (ft)		507		194	116	
Turn Bay Length (ft)	325					
Base Capacity (vph)	177	1443	398	2039	533	792
Starvation Cap Reductn	0	0	7	511	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.68	0.84	1.19	0.43	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	208	846	1182	347	360	469	95	474
v/c Ratio	0.82	0.64	0.96	0.88	0.88	0.80	0.23	0.96
Control Delay	63.5	23.6	48.1	54.5	55.1	22.6	27.1	52.7
Queue Delay	0.0	30.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	54.1	48.1	54.5	55.1	22.6	27.1	52.7
Queue Length 50th (ft)	54	180	212	176	183	79	39	157
Queue Length 95th (ft)	#101	223	#305	#332	#343	#238	79	#348
Internal Link Dist (ft)		194	370		202			
Turn Bay Length (ft)							45	
Base Capacity (vph)	253	1313	1236	396	407	588	408	496
Starvation Cap Reductn	0	505	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.82	1.05	0.96	0.88	0.88	0.80	0.23	0.96

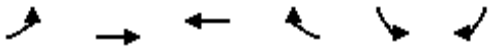
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	NBL2	NBT	SBL	SBR	NEL
Lane Group Flow (vph)	394	240	6	197	445	40	112
v/c Ratio	0.90	0.52	0.06	0.65	0.87	0.05	0.51
Control Delay	60.1	35.9	44.5	43.8	51.5	15.3	45.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.1	35.9	44.5	43.8	51.5	15.3	45.4
Queue Length 50th (ft)	217	118	3	98	239	11	59
Queue Length 95th (ft)	#281	156	14	136	#485	37	88
Internal Link Dist (ft)		356		181			235
Turn Bay Length (ft)							
Base Capacity (vph)	438	458	105	414	511	767	358
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	0.90	0.52	0.06	0.48	0.87	0.05	0.31

Intersection Summary

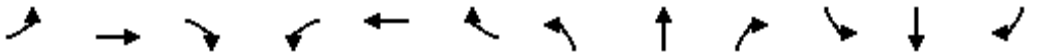
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	282	384	19	49	14
Future Volume (Veh/h)	5	282	384	19	49	14
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)	5	307	417	21	53	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	438				591	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	438				591	428
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	97
cM capacity (veh/h)	1118				436	576

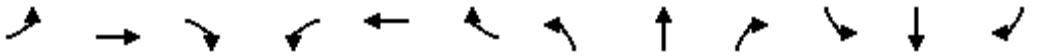
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	107	205	438	68
Volume Left	5	0	0	53
Volume Right	0	0	21	15
cSH	1118	1700	1700	461
Volume to Capacity	0.00	0.12	0.26	0.15
Queue Length 95th (ft)	0	0	0	13
Control Delay (s)	0.4	0.0	0.0	14.2
Lane LOS	A			B
Approach Delay (s)	0.1		0.0	14.2
Approach LOS				B

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	31.6%	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)	158	1114	96	188	1434	247	0	0	0	139	81	111
Future Volume (vph)	158	1114	96	188	1434	247	0	0	0	139	81	111
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
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						0.99	1.00
Frt	1.00	0.99		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1805	5118		1787	5007						1814	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1805	5118		1787	5007						1814	1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	163	1148	99	196	1494	257	0	0	0	151	88	121
RTOR Reduction (vph)	0	17	0	0	40	0	0	0	0	0	0	16
Lane Group Flow (vph)	163	1230	0	196	1711	0	0	0	0	0	239	105
Confl. Peds. (#/hr)			4	4					8	8		
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	6.5	18.7		9.3	21.5						18.5	25.0
Effective Green, g (s)	6.5	18.7		9.3	21.5						18.5	25.0
Actuated g/C Ratio	0.11	0.31		0.16	0.36						0.31	0.42
Clearance Time (s)	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
Lane Grp Cap (vph)	195	1595		276	1794						559	786
v/s Ratio Prot	0.09	0.24		c0.11	c0.34							0.01
v/s Ratio Perm											0.13	0.05
v/c Ratio	0.84	0.77		0.71	0.95						0.43	0.13
Uniform Delay, d1	26.2	18.7		24.1	18.8						16.5	10.8
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	25.5	2.4		8.3	12.0						2.4	0.1
Delay (s)	51.7	21.1		32.4	30.8						18.9	10.9
Level of Service	D	C		C	C						B	B
Approach Delay (s)		24.6			30.9			0.0			16.2	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	71.8%	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)	289	937	0	0	915	17	575	218	357	70	0	410
Future Volume (vph)	289	937	0	0	915	17	575	218	357	70	0	410
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.98	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3502	3610			5118		1698	1747	1563	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3502	3610			5118		1698	1747	1563	1805		1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	298	966	0	0	1064	20	593	225	368	80	0	471
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	202	0	0	164
Lane Group Flow (vph)	298	966	0	0	1082	0	403	415	166	80	0	307
Confl. Peds. (#/hr)	13		8	8		13			7	7		
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	8.7	33.1			19.9		24.9	24.9	24.9	18.5		18.5
Effective Green, g (s)	8.7	33.1			19.9		24.9	24.9	24.9	18.5		18.5
Actuated g/C Ratio	0.10	0.37			0.22		0.28	0.28	0.28	0.21		0.21
Clearance Time (s)	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
Lane Grp Cap (vph)	338	1327			1131		469	483	432	371		331
v/s Ratio Prot	0.09	c0.27			c0.21		0.24	c0.24		0.04		
v/s Ratio Perm									0.11			c0.19
v/c Ratio	0.88	0.73			0.96		0.86	0.86	0.38	0.22		0.93
Uniform Delay, d1	40.1	24.6			34.6		30.9	30.9	26.3	29.7		35.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	22.5	2.0			17.1		18.2	17.8	2.6	1.3		33.8
Delay (s)	62.7	26.6			51.8		49.1	48.7	28.9	31.0		68.9
Level of Service	E	C			D		D	D	C	C		E
Approach Delay (s)		35.1			51.8			42.7			63.4	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

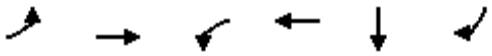
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	33	571	363	0	0	281
Future Volume (Veh/h)	33	571	363	0	0	281
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.87	0.87
Hourly flow rate (vph)	37	642	399	0	0	323
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	560	200			399	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	560	200			399	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	20			100	
cM capacity (veh/h)	456	805			1163	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	37	642	200	200	162	162
Volume Left	37	0	0	0	0	0
Volume Right	0	642	0	0	0	0
cSH	456	805	1700	1700	1700	1700
Volume to Capacity	0.08	0.80	0.12	0.12	0.10	0.10
Queue Length 95th (ft)	7	209	0	0	0	0
Control Delay (s)	13.6	24.6	0.0	0.0	0.0	0.0
Lane LOS	B	C				
Approach Delay (s)	24.0		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	11.6		
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	288	8	22	4	79	7	296	79	29	18
Future Volume (vph)	288	8	22	4	79	7	296	79	29	18
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.97	0.99	
Flpb, ped/bikes	1.00	1.00		0.92	1.00		1.00	1.00	1.00	
Frt	1.00	0.89		1.00	0.99		1.00	0.85	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1787	1646		1648	1855		1805	1574	1739	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1787	1646		1648	1855		1805	1574	1739	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.97	0.97	0.78	0.78
Adj. Flow (vph)	320	9	24	4	88	8	305	81	37	23
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0
Lane Group Flow (vph)	320	33	0	4	92	0	305	81	60	0
Confl. Peds. (#/hr)			2	2		1	1	2		1
Confl. Bikes (#/hr)								1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%
Turn Type	Split	NA		Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7		1			5		8	
Permitted Phases					6			2		
Actuated Green, G (s)	17.1	17.1		0.9	10.4		18.2	27.7	18.2	
Effective Green, g (s)	17.1	17.1		0.9	10.4		18.2	27.7	18.2	
Actuated g/C Ratio	0.21	0.21		0.01	0.13		0.22	0.34	0.22	
Clearance Time (s)	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	
Lane Grp Cap (vph)	373	343		18	235		401	532	386	
v/s Ratio Prot	c0.18	0.02		0.00			c0.17		c0.03	
v/s Ratio Perm					c0.05			0.05		
v/c Ratio	0.86	0.10		0.22	0.39		0.76	0.15	0.16	
Uniform Delay, d1	31.2	26.2		40.2	32.8		29.8	18.9	25.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	17.4	0.1		6.2	1.1		12.8	0.1	0.9	
Delay (s)	48.6	26.3		46.3	33.9		42.6	19.0	26.5	
Level of Service	D	C		D	C		D	B	C	
Approach Delay (s)		46.5			34.4				26.5	
Approach LOS		D			C				C	

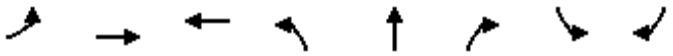
Intersection Summary			
HCM 2000 Control Delay	40.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	SBT	SBR
Lane Group Flow (vph)	163	1247	196	1751	239	121
v/c Ratio	0.84	0.77	0.71	0.95	0.43	0.15
Control Delay	63.6	22.5	40.3	32.5	19.4	7.3
Queue Delay	0.0	0.0	0.0	43.7	0.0	0.0
Total Delay	63.6	22.5	40.3	76.2	19.4	7.3
Queue Length 50th (ft)	59	146	68	213	68	17
Queue Length 95th (ft)	#152	194	#150	#320	124	41
Internal Link Dist (ft)		507		194	116	
Turn Bay Length (ft)	325					
Base Capacity (vph)	195	1611	288	1834	559	799
Starvation Cap Reductn	0	0	0	332	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.77	0.68	1.17	0.43	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	NBL	NBT	NBR	SBL	SBR
Lane Group Flow (vph)	298	966	1084	403	415	368	80	471
v/c Ratio	0.88	0.73	0.96	0.86	0.86	0.58	0.22	0.95
Control Delay	68.1	28.5	53.7	50.6	50.1	11.5	31.6	51.2
Queue Delay	0.0	50.5	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	79.0	53.7	50.6	50.1	11.5	31.6	51.2
Queue Length 50th (ft)	87	245	223	228	234	39	38	158
Queue Length 95th (ft)	#160	318	#289	#397	#405	124	75	#328
Internal Link Dist (ft)		194	370		202			
Turn Bay Length (ft)							45	
Base Capacity (vph)	338	1327	1133	469	483	634	371	496
Starvation Cap Reductn	0	543	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.88	1.23	0.96	0.86	0.86	0.58	0.22	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	NBL2	NBT	SBL	SBR	NEL
Lane Group Flow (vph)	320	33	4	96	305	81	60
v/c Ratio	0.82	0.09	0.03	0.43	0.73	0.15	0.15
Control Delay	49.3	27.0	38.0	38.0	41.7	19.1	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.3	27.0	38.0	38.0	41.7	19.1	27.7
Queue Length 50th (ft)	155	13	2	44	146	26	25
Queue Length 95th (ft)	#306	38	12	89	#284	65	51
Internal Link Dist (ft)		356		181			235
Turn Bay Length (ft)							
Base Capacity (vph)	414	381	115	434	419	640	403
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	0.77	0.09	0.03	0.22	0.73	0.13	0.15

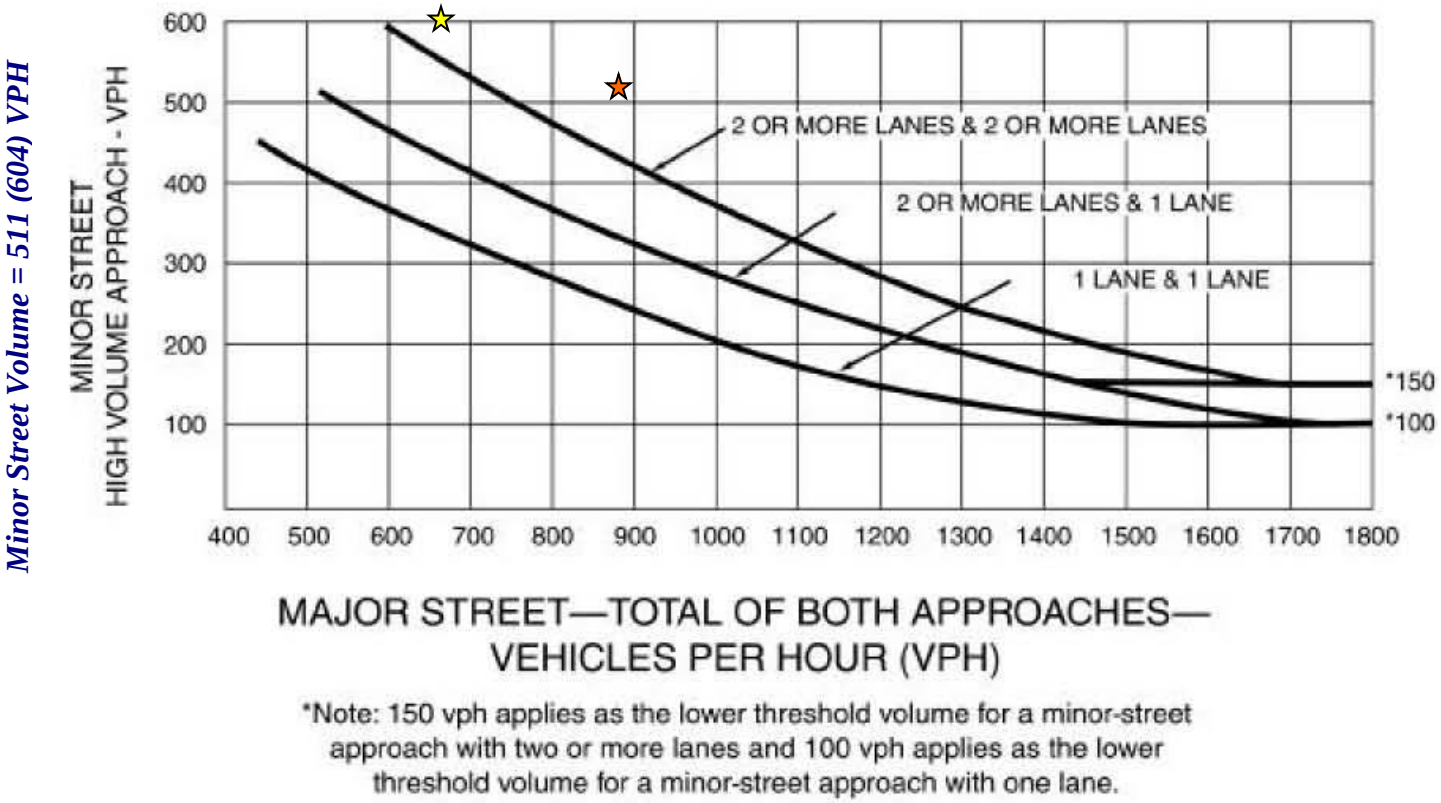
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Peak Hour Warrant (Urban Areas)

Intersection: Strobridge Avenue/Stanton Avenue & I-580 WB Off-Ramp, Alameda County, CA
Scenario: Existing plus Project Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 890 (664) VPH

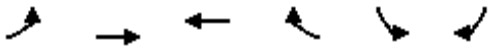
★ ***AM Peak Hour***

★ ***PM Peak Hour***

A signal IS WARRANTED in the a.m. Peak Hour
A signal IS WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

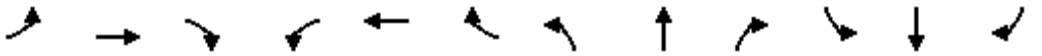
Appendix D – Cumulative Conditions Level of Service Worksheets



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	408	453	4	4	3
Future Volume (Veh/h)	4	408	453	4	4	3
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)	4	443	492	4	4	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	496				724	494
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	496				724	494
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1064				360	521

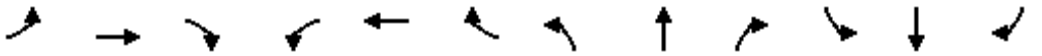
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	152	295	496	7
Volume Left	4	0	0	4
Volume Right	0	0	4	3
cSH	1064	1700	1700	415
Volume to Capacity	0.00	0.17	0.29	0.02
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.3	0.0	0.0	13.8
Lane LOS	A			B
Approach Delay (s)	0.1		0.0	13.8
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	34.1%	ICU Level of Service	A
Analysis Period (min)	15		



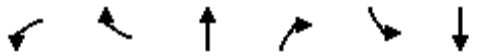
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	140	1101	133	423	1992	320	0	0	0	140	119	152
Future Volume (vph)	140	1101	133	423	1992	320	0	0	0	140	119	152
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						0.99	1.00
Frt	1.00	0.98		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1770	4992		1787	5015						1820	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1770	4992		1787	5015						1820	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.94	0.94	0.94	0.25	0.25	0.25	0.85	0.85	0.85
Adj. Flow (vph)	154	1210	146	450	2119	340	0	0	0	165	140	179
RTOR Reduction (vph)	0	16	0	0	24	0	0	0	0	0	0	48
Lane Group Flow (vph)	154	1340	0	450	2435	0	0	0	0	0	305	131
Confl. Peds. (#/hr)			6	6					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	10.1	30.2		25.5	45.6						20.5	30.6
Effective Green, g (s)	10.1	30.2		25.5	45.6						20.5	30.6
Actuated g/C Ratio	0.11	0.34		0.28	0.51						0.23	0.34
Clearance Time (s)	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
Lane Grp Cap (vph)	199	1680		508	2549						415	625
v/s Ratio Prot	0.09	0.27		c0.25	c0.49							0.02
v/s Ratio Perm											0.17	0.06
v/c Ratio	0.77	0.80		0.89	0.96						0.73	0.21
Uniform Delay, d1	38.7	27.0		30.7	21.1						32.1	21.0
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	16.9	2.7		16.8	9.4						11.0	0.2
Delay (s)	55.6	29.7		47.5	30.5						43.1	21.1
Level of Service	E	C		D	C						D	C
Approach Delay (s)		32.4			33.1			0.0			35.0	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	13.5
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)	242	984	0	0	1477	51	686	242	625	119	0	592
Future Volume (vph)	242	984	0	0	1477	51	686	242	625	119	0	592
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.96	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			0.99		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5106		1698	1745	1536	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5106		1698	1745	1536	1805		1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	285	1158	0	0	1555	54	707	249	644	129	0	643
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	182	0	0	112
Lane Group Flow (vph)	285	1158	0	0	1607	0	474	482	462	129	0	531
Confl. Peds. (#/hr)	3		12	12		3			11	11		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	11.5	55.5			39.5		42.5	42.5	42.5	38.5		38.5
Effective Green, g (s)	11.5	55.5			39.5		42.5	42.5	42.5	38.5		38.5
Actuated g/C Ratio	0.08	0.37			0.26		0.28	0.28	0.28	0.26		0.26
Clearance Time (s)	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
Lane Grp Cap (vph)	263	1309			1344		481	494	435	463		414
v/s Ratio Prot	c0.08	0.33			c0.31		0.28	0.28		0.07		
v/s Ratio Perm									c0.30			c0.33
v/c Ratio	1.08	0.88			1.20		0.99	0.98	1.06	0.28		1.28
Uniform Delay, d1	69.2	44.3			55.2		53.4	53.2	53.8	44.6		55.8
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	79.6	7.5			95.5		37.6	34.9	60.6	1.5		144.3
Delay (s)	148.8	51.7			150.8		91.0	88.1	114.3	46.1		200.0
Level of Service	F	D			F		F	F	F	D		F
Approach Delay (s)		70.9			150.8			99.5			174.3	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	117.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	667	631	0	0	588
Future Volume (Veh/h)	21	667	631	0	0	588
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.92	0.89	0.89	1.00	0.85
Hourly flow rate (vph)	23	725	709	0	0	692
Pedestrians			1			3
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	1056	358			709	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1056	358			709	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	0			100	
cM capacity (veh/h)	220	637			893	

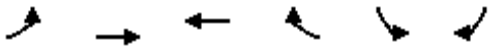
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	23	725	354	354	346	346
Volume Left	23	0	0	0	0	0
Volume Right	0	725	0	0	0	0
cSH	220	637	1700	1700	1700	1700
Volume to Capacity	0.10	1.14	0.21	0.21	0.20	0.20
Queue Length 95th (ft)	9	572	0	0	0	0
Control Delay (s)	23.2	103.8	0.0	0.0	0.0	0.0
Lane LOS	C	F				
Approach Delay (s)	101.3		0.0		0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	35.3		
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations											
Traffic Volume (vph)	368	216	3	5	5	152	43	559	51	60	47
Future Volume (vph)	368	216	3	5	5	152	43	559	51	60	47
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.99			1.00	0.97		1.00	0.85	0.94	
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1805	1889			1787	1819		1770	1583	1688	
Flt Permitted	0.95	1.00			0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1805	1889			1787	1819		1770	1583	1688	
Peak-hour factor, PHF	0.68	0.68	0.68	0.68	0.72	0.72	0.72	0.92	0.92	0.70	0.70
Adj. Flow (vph)	541	318	4	7	7	211	60	608	55	86	67
RTOR Reduction (vph)	0	0	0	0	0	7	0	0	0	0	0
Lane Group Flow (vph)	541	329	0	0	7	264	0	608	55	153	0
Confl. Peds. (#/hr)				2	2						
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
Turn Type	Split	NA			Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7			1			5		8	
Permitted Phases						6			2		
Actuated Green, G (s)	42.5	42.5			1.0	26.5		48.5	74.0	16.5	
Effective Green, g (s)	42.5	42.5			1.0	26.5		48.5	74.0	16.5	
Actuated g/C Ratio	0.28	0.28			0.01	0.17		0.32	0.49	0.11	
Clearance Time (s)	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	
Lane Grp Cap (vph)	504	528			11	317		564	770	183	
v/s Ratio Prot	c0.30	0.17			0.00			c0.34		c0.09	
v/s Ratio Perm						c0.15			0.03		
v/c Ratio	1.07	0.62			0.64	0.83		1.08	0.07	0.84	
Uniform Delay, d1	54.8	47.8			75.3	60.6		51.8	20.7	66.4	
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	61.2	2.3			81.7	16.9		60.6	0.0	26.8	
Delay (s)	116.0	50.1			157.1	77.6		112.4	20.8	93.2	
Level of Service	F	D			F	E		F	C	F	
Approach Delay (s)		91.0				79.6				93.2	
Approach LOS		F				E				F	

Intersection Summary			
HCM 2000 Control Delay	94.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

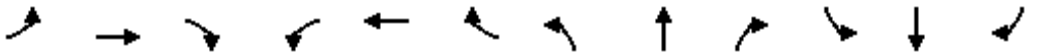
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	387	527	4	12	12
Future Volume (Veh/h)	4	387	527	4	12	12
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)	4	421	573	4	13	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	577				794	575
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	577				794	575
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				96	97
cM capacity (veh/h)	993				324	461

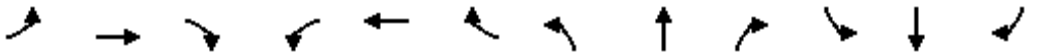
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	144	281	577	26
Volume Left	4	0	0	13
Volume Right	0	0	4	13
cSH	993	1700	1700	381
Volume to Capacity	0.00	0.17	0.34	0.07
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	0.3	0.0	0.0	15.1
Lane LOS	A			C
Approach Delay (s)	0.1		0.0	15.1
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		



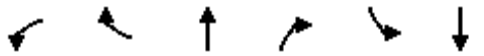
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	1529	132	258	1969	327	0	0	0	173	99	128
Future Volume (vph)	207	1529	132	258	1969	327	0	0	0	173	99	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						0.99	1.00
Frt	1.00	0.99		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1805	5118		1787	5011						1809	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1805	5118		1787	5011						1809	1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	213	1576	136	269	2051	341	0	0	0	188	108	139
RTOR Reduction (vph)	0	11	0	0	25	0	0	0	0	0	0	46
Lane Group Flow (vph)	213	1701	0	269	2367	0	0	0	0	0	296	93
Confl. Peds. (#/hr)			4	4					8	8		
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	12.3	39.1		16.7	43.5						20.5	32.8
Effective Green, g (s)	12.3	39.1		16.7	43.5						20.5	32.8
Actuated g/C Ratio	0.14	0.44		0.19	0.48						0.23	0.37
Clearance Time (s)	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
Lane Grp Cap (vph)	247	2228		332	2427						412	664
v/s Ratio Prot	0.12	0.33		c0.15	c0.47							0.02
v/s Ratio Perm											0.16	0.04
v/c Ratio	0.86	0.76		0.81	0.98						0.72	0.14
Uniform Delay, d1	37.9	21.4		35.0	22.6						32.0	19.1
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	25.2	1.6		13.9	12.9						10.3	0.1
Delay (s)	63.1	23.0		48.9	35.5						42.3	19.2
Level of Service	E	C		D	D						D	B
Approach Delay (s)		27.5			36.9			0.0			34.9	
Approach LOS		C			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	13.5
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	391	1274	0	0	1251	23	785	299	490	96	0	560
Future Volume (vph)	391	1274	0	0	1251	23	785	299	490	96	0	560
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.97	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3502	3610			5117		1698	1747	1552	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3502	3610			5117		1698	1747	1552	1805		1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	403	1313	0	0	1455	27	809	308	505	110	0	644
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	175	0	0	136
Lane Group Flow (vph)	403	1313	0	0	1480	0	550	567	330	110	0	508
Confl. Peds. (#/hr)	13		8	8		13			7	7		
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	14.5	55.5			36.5		45.5	45.5	45.5	35.5		35.5
Effective Green, g (s)	14.5	55.5			36.5		45.5	45.5	45.5	35.5		35.5
Actuated g/C Ratio	0.10	0.37			0.24		0.30	0.30	0.30	0.24		0.24
Clearance Time (s)	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
Lane Grp Cap (vph)	338	1335			1245		515	529	470	427		382
v/s Ratio Prot	c0.12	0.36			c0.29		0.32	c0.32		0.06		
v/s Ratio Perm									0.21			c0.31
v/c Ratio	1.19	0.98			1.19		1.07	1.07	0.70	0.26		1.33
Uniform Delay, d1	67.8	46.8			56.8		52.2	52.2	46.3	46.5		57.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	112.0	20.6			93.4		59.0	59.8	8.5	1.5		165.6
Delay (s)	179.8	67.4			150.1		111.3	112.0	54.8	48.0		222.9
Level of Service	F	E			F		F	F	D	D		F
Approach Delay (s)		93.8			150.1			93.9			197.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	122.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	100.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	780	498	0	0	373
Future Volume (Veh/h)	45	780	498	0	0	373
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.87	0.87
Hourly flow rate (vph)	51	876	547	0	0	429
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	762	274			547	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	762	274			547	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	0			100	
cM capacity (veh/h)	339	721			1025	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	51	876	274	274	214	214
Volume Left	51	0	0	0	0	0
Volume Right	0	876	0	0	0	0
cSH	339	721	1700	1700	1700	1700
Volume to Capacity	0.15	1.21	0.16	0.16	0.13	0.13
Queue Length 95th (ft)	13	756	0	0	0	0
Control Delay (s)	17.5	129.5	0.0	0.0	0.0	0.0
Lane LOS	C	F				
Approach Delay (s)	123.3		0.0		0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	60.1		
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		

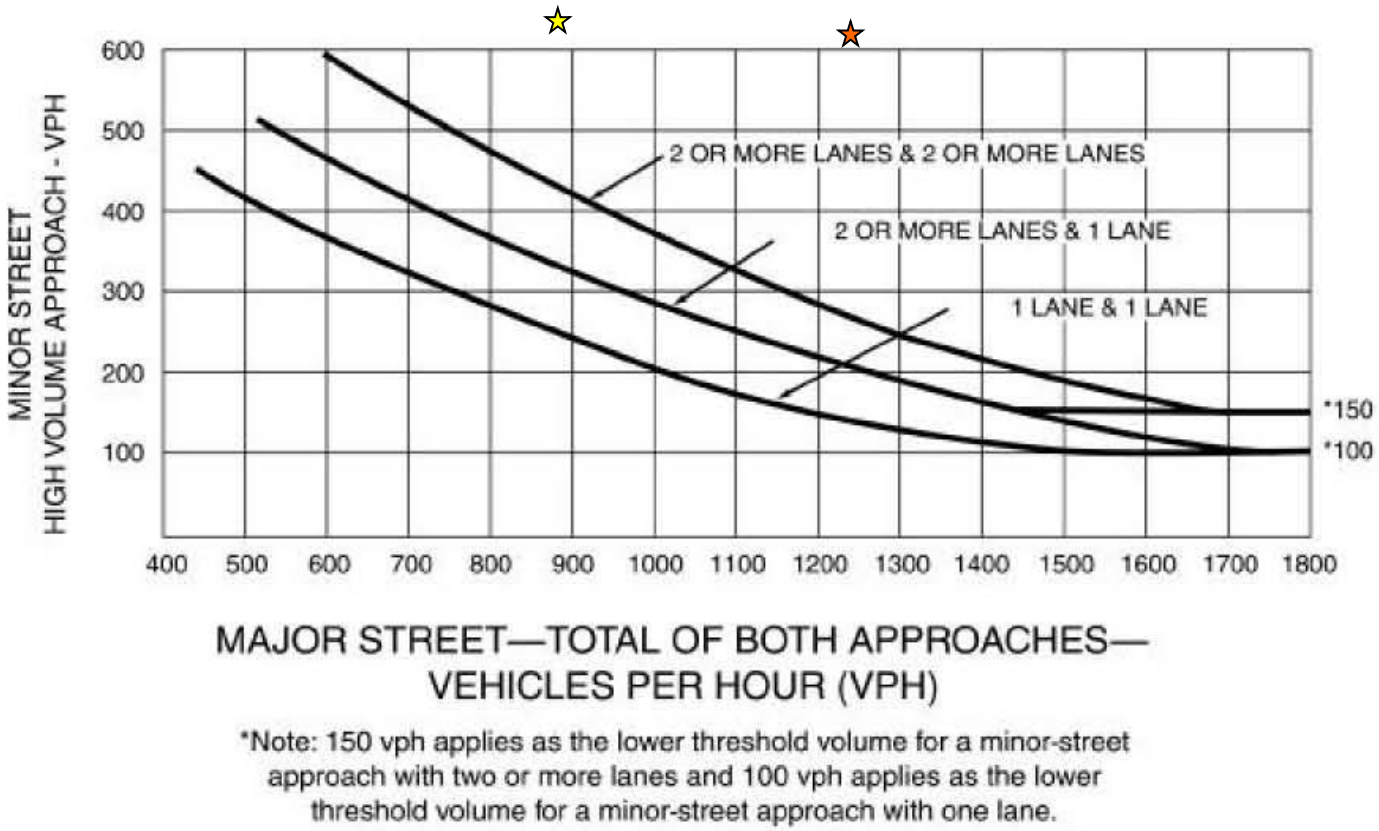
Movement	EBL	EBT	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	395	11	30	5	108	10	394	108	40	25
Future Volume (vph)	395	11	30	5	108	10	394	108	40	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5		4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.97	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.89		1.00	0.99		1.00	0.85	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1787	1645		1787	1855		1805	1573	1738	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1787	1645		1787	1855		1805	1573	1738	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.97	0.97	0.78	0.78
Adj. Flow (vph)	439	12	33	6	120	11	406	111	51	32
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0
Lane Group Flow (vph)	439	45	0	6	128	0	406	111	83	0
Confl. Peds. (#/hr)			2	2		1	1	2		1
Confl. Bikes (#/hr)								1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%
Turn Type	Split	NA		Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7		1			5		8	
Permitted Phases					6			2		
Actuated Green, G (s)	23.5	23.5		1.0	15.3		21.5	35.8	18.0	
Effective Green, g (s)	23.5	23.5		1.0	15.3		21.5	35.8	18.0	
Actuated g/C Ratio	0.24	0.24		0.01	0.16		0.22	0.37	0.19	
Clearance Time (s)	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	
Lane Grp Cap (vph)	436	401		18	294		402	584	324	
v/s Ratio Prot	c0.25	0.03		0.00			c0.22		c0.05	
v/s Ratio Perm					c0.07			0.07		
v/c Ratio	1.01	0.11		0.33	0.43		1.01	0.19	0.26	
Uniform Delay, d1	36.4	28.3		47.3	36.6		37.4	20.4	33.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	44.8	0.1		10.6	1.0		47.4	0.2	1.9	
Delay (s)	81.2	28.4		57.9	37.6		84.8	20.6	35.3	
Level of Service	F	C		E	D		F	C	D	
Approach Delay (s)		76.3			38.5				35.3	
Approach LOS		E			D				D	

Intersection Summary			
HCM 2000 Control Delay	67.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	96.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Peak Hour Warrant (Urban Areas)

Intersection: Strobridge Avenue/Stanton Avenue & I-580 WB Off-Ramp, Alameda County, CA
Scenario: Cumulative (2035) Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Minor Street Volume = 688 (825) VPH

Major Street Volume = 1219 (871) VPH

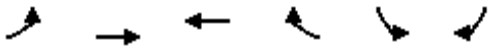
★ ***AM Peak Hour***

★ ***PM Peak Hour***

A signal IS WARRANTED in the a.m. Peak Hour
A signal IS WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

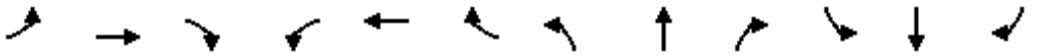
Appendix E – Cumulative plus Project Conditions Level of Service Worksheets



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	408	453	49	12	4
Future Volume (Veh/h)	9	408	453	49	12	4
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)	10	443	492	53	13	4
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	545				760	518
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	545				760	518
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	99
cM capacity (veh/h)	1020				339	502

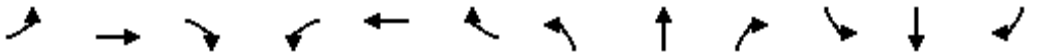
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	158	295	545	17
Volume Left	10	0	0	13
Volume Right	0	0	53	4
cSH	1020	1700	1700	367
Volume to Capacity	0.01	0.17	0.32	0.05
Queue Length 95th (ft)	1	0	0	4
Control Delay (s)	0.6	0.0	0.0	15.3
Lane LOS	A			C
Approach Delay (s)	0.2		0.0	15.3
Approach LOS				C

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		



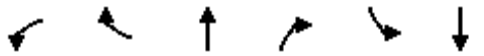
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	1101	133	423	1992	345	0	0	0	143	121	155
Future Volume (vph)	160	1101	133	423	1992	345	0	0	0	143	121	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						0.99	1.00
Frt	1.00	0.98		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1770	4992		1787	5007						1820	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1770	4992		1787	5007						1820	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.94	0.94	0.94	0.25	0.25	0.25	0.85	0.85	0.85
Adj. Flow (vph)	176	1210	146	450	2119	367	0	0	0	168	142	182
RTOR Reduction (vph)	0	16	0	0	27	0	0	0	0	0	0	48
Lane Group Flow (vph)	176	1340	0	450	2459	0	0	0	0	0	310	134
Confl. Peds. (#/hr)			6	6					8	8		
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	10.5	30.2		25.8	45.5						20.5	31.0
Effective Green, g (s)	10.5	30.2		25.8	45.5						20.5	31.0
Actuated g/C Ratio	0.12	0.34		0.29	0.51						0.23	0.34
Clearance Time (s)	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
Lane Grp Cap (vph)	206	1675		512	2531						414	630
v/s Ratio Prot	0.10	0.27		c0.25	c0.49							0.02
v/s Ratio Perm											0.17	0.06
v/c Ratio	0.85	0.80		0.88	0.97						0.75	0.21
Uniform Delay, d1	39.0	27.2		30.6	21.6						32.4	20.9
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	27.5	2.8		15.7	11.9						11.7	0.2
Delay (s)	66.5	30.0		46.3	33.6						44.1	21.0
Level of Service	E	C		D	C						D	C
Approach Delay (s)		34.2			35.5			0.0			35.6	
Approach LOS		C			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	243	986	0	0	1487	51	696	242	625	119	0	597
Future Volume (vph)	243	986	0	0	1487	51	696	242	625	119	0	597
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.96	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			0.99		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3433	3539			5107		1698	1745	1538	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3433	3539			5107		1698	1745	1538	1805		1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.95	0.95	0.95	0.97	0.97	0.97	0.92	0.92	0.92
Adj. Flow (vph)	286	1160	0	0	1565	54	718	249	644	129	0	649
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	181	0	0	111
Lane Group Flow (vph)	286	1160	0	0	1617	0	481	486	463	129	0	538
Confl. Peds. (#/hr)	3		12	12		3			11	11		
Confl. Bikes (#/hr)			1						1			
Heavy Vehicles (%)	2%	2%	2%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	10.5	51.5			36.5		39.5	39.5	39.5	35.5		35.5
Effective Green, g (s)	10.5	51.5			36.5		39.5	39.5	39.5	35.5		35.5
Actuated g/C Ratio	0.08	0.37			0.26		0.28	0.28	0.28	0.25		0.25
Clearance Time (s)	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
Lane Grp Cap (vph)	257	1301			1331		479	492	433	457		409
v/s Ratio Prot	c0.08	0.33			c0.32		0.28	0.28		0.07		
v/s Ratio Perm									c0.30			c0.33
v/c Ratio	1.11	0.89			1.21		1.00	0.99	1.07	0.28		1.31
Uniform Delay, d1	64.8	41.6			51.8		50.2	50.0	50.2	42.0		52.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	89.8	8.1			103.7		42.2	37.7	63.0	1.5		158.2
Delay (s)	154.6	49.7			155.5		92.4	87.7	113.3	43.5		210.4
Level of Service	F	D			F		F	F	F	D		F
Approach Delay (s)		70.4			155.5			99.3			182.7	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	120.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	677	631	0	0	590
Future Volume (Veh/h)	21	677	631	0	0	590
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.90	0.92	0.89	0.89	1.00	0.85
Hourly flow rate (vph)	23	736	709	0	0	694
Pedestrians			1			3
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	1057	358			709	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1057	358			709	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	0			100	
cM capacity (veh/h)	220	637			893	

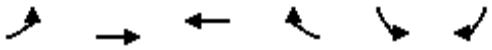
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	23	736	354	354	347	347
Volume Left	23	0	0	0	0	0
Volume Right	0	736	0	0	0	0
cSH	220	637	1700	1700	1700	1700
Volume to Capacity	0.10	1.16	0.21	0.21	0.20	0.20
Queue Length 95th (ft)	9	598	0	0	0	0
Control Delay (s)	23.3	110.0	0.0	0.0	0.0	0.0
Lane LOS	C	F				
Approach Delay (s)	107.4		0.0		0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	37.7		
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations											
Traffic Volume (vph)	368	216	3	5	5	152	43	561	51	60	47
Future Volume (vph)	368	216	3	5	5	152	43	561	51	60	47
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.99			1.00	0.97		1.00	0.85	0.94	
Flt Protected	0.95	1.00			0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1805	1889			1787	1819		1770	1583	1688	
Flt Permitted	0.95	1.00			0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1805	1889			1787	1819		1770	1583	1688	
Peak-hour factor, PHF	0.68	0.68	0.68	0.68	0.72	0.72	0.72	0.92	0.92	0.70	0.70
Adj. Flow (vph)	541	318	4	7	7	211	60	610	55	86	67
RTOR Reduction (vph)	0	0	0	0	0	7	0	0	0	0	0
Lane Group Flow (vph)	541	329	0	0	7	264	0	610	55	153	0
Confl. Peds. (#/hr)				2	2						
Heavy Vehicles (%)	0%	0%	0%	0%	1%	1%	1%	2%	2%	3%	3%
Turn Type	Split	NA			Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7			1			5		8	
Permitted Phases						6			2		
Actuated Green, G (s)	42.5	42.5			1.0	26.5		48.5	74.0	16.5	
Effective Green, g (s)	42.5	42.5			1.0	26.5		48.5	74.0	16.5	
Actuated g/C Ratio	0.28	0.28			0.01	0.17		0.32	0.49	0.11	
Clearance Time (s)	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	
Lane Grp Cap (vph)	504	528			11	317		564	770	183	
v/s Ratio Prot	c0.30	0.17			0.00			c0.34		c0.09	
v/s Ratio Perm						c0.15			0.03		
v/c Ratio	1.07	0.62			0.64	0.83		1.08	0.07	0.84	
Uniform Delay, d1	54.8	47.8			75.3	60.6		51.8	20.7	66.4	
Progression Factor	1.00	1.00			1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	61.2	2.3			81.7	16.9		61.8	0.0	26.8	
Delay (s)	116.0	50.1			157.1	77.6		113.6	20.8	93.2	
Level of Service	F	D			F	E		F	C	F	
Approach Delay (s)		91.0				79.6				93.2	
Approach LOS		F				E				F	

Intersection Summary			
HCM 2000 Control Delay	94.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	152.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
Analysis Period (min)	15		

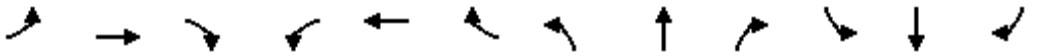
c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	387	527	20	52	17
Future Volume (Veh/h)	6	387	527	20	52	17
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)	7	421	573	22	57	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			196			
pX, platoon unblocked						
vC, conflicting volume	595				808	584
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	595				808	584
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				82	96
cM capacity (veh/h)	977				316	455

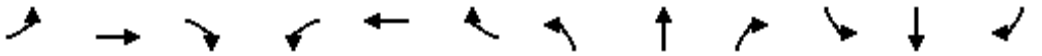
Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	147	281	595	75
Volume Left	7	0	0	57
Volume Right	0	0	22	18
cSH	977	1700	1700	341
Volume to Capacity	0.01	0.17	0.35	0.22
Queue Length 95th (ft)	1	0	0	21
Control Delay (s)	0.5	0.0	0.0	18.5
Lane LOS	A			C
Approach Delay (s)	0.2		0.0	18.5
Approach LOS				C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		



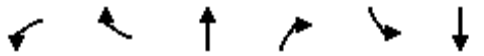
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	1529	132	258	1969	336	0	0	0	186	108	146
Future Volume (vph)	214	1529	132	258	1969	336	0	0	0	186	108	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5						4.5	4.5
Lane Util. Factor	1.00	0.91		1.00	0.91						1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00						1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00						0.99	1.00
Frt	1.00	0.99		1.00	0.98						1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (prot)	1805	5118		1787	5008						1810	1599
Flt Permitted	0.95	1.00		0.95	1.00						0.97	1.00
Satd. Flow (perm)	1805	5118		1787	5008						1810	1599
Peak-hour factor, PHF	0.97	0.97	0.97	0.96	0.96	0.96	0.25	0.25	0.25	0.92	0.92	0.92
Adj. Flow (vph)	221	1576	136	269	2051	350	0	0	0	202	117	159
RTOR Reduction (vph)	0	11	0	0	26	0	0	0	0	0	0	46
Lane Group Flow (vph)	221	1701	0	269	2375	0	0	0	0	0	319	113
Confl. Peds. (#/hr)			4	4					8	8		
Confl. Bikes (#/hr)			1			1						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Prot	NA		Prot	NA					Perm	NA	pm+ov
Protected Phases	7	4		3	8						6	7
Permitted Phases										6		6
Actuated Green, G (s)	12.5	39.3		16.7	43.5						20.5	33.0
Effective Green, g (s)	12.5	39.3		16.7	43.5						20.5	33.0
Actuated g/C Ratio	0.14	0.44		0.19	0.48						0.23	0.37
Clearance Time (s)	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
Lane Grp Cap (vph)	250	2234		331	2420						412	666
v/s Ratio Prot	0.12	0.33		c0.15	c0.47							0.02
v/s Ratio Perm											0.18	0.05
v/c Ratio	0.88	0.76		0.81	0.98						0.77	0.17
Uniform Delay, d1	38.0	21.4		35.1	22.8						32.6	19.2
Progression Factor	1.00	1.00		1.00	1.00						1.00	1.00
Incremental Delay, d2	28.6	1.6		14.1	14.1						13.3	0.1
Delay (s)	66.7	23.0		49.2	37.0						45.8	19.4
Level of Service	E	C		D	D						D	B
Approach Delay (s)		28.0			38.2			0.0			37.0	
Approach LOS		C			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	91.3%	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)	395	1283	0	0	1255	23	788	299	490	96	0	562
Future Volume (vph)	395	1283	0	0	1255	23	788	299	490	96	0	562
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
Lane Util. Factor	0.97	0.95			0.91		0.95	0.95	1.00	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	0.97	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	1.00	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (prot)	3502	3610			5117		1698	1747	1552	1805		1615
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00	0.95		1.00
Satd. Flow (perm)	3502	3610			5117		1698	1747	1552	1805		1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.97	0.97	0.97	0.87	0.87	0.87
Adj. Flow (vph)	407	1323	0	0	1459	27	812	308	505	110	0	646
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	175	0	0	136
Lane Group Flow (vph)	407	1323	0	0	1484	0	552	568	330	110	0	510
Confl. Peds. (#/hr)	13		8	8		13			7	7		
Confl. Bikes (#/hr)			1			2						
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	1%	1%	1%	0%	0%	0%
Turn Type	Prot	NA			NA		Split	NA	Perm	Prot		Perm
Protected Phases	7	4			8		2	2		6		
Permitted Phases									2			6
Actuated Green, G (s)	14.5	55.5			36.5		45.5	45.5	45.5	35.5		35.5
Effective Green, g (s)	14.5	55.5			36.5		45.5	45.5	45.5	35.5		35.5
Actuated g/C Ratio	0.10	0.37			0.24		0.30	0.30	0.30	0.24		0.24
Clearance Time (s)	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
Lane Grp Cap (vph)	338	1335			1245		515	529	470	427		382
v/s Ratio Prot	c0.12	0.37			c0.29		0.33	c0.33		0.06		
v/s Ratio Perm									0.21			c0.32
v/c Ratio	1.20	0.99			1.19		1.07	1.07	0.70	0.26		1.34
Uniform Delay, d1	67.8	47.0			56.8		52.2	52.2	46.3	46.5		57.2
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	116.6	22.4			94.7		60.3	60.4	8.5	1.5		167.8
Delay (s)	184.4	69.4			151.5		112.5	112.6	54.8	48.0		225.1
Level of Service	F	E			F		F	F	D	D		F
Approach Delay (s)		96.4			151.5			94.6			199.3	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	124.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	45	783	498	0	0	382
Future Volume (Veh/h)	45	783	498	0	0	382
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.91	0.91	0.87	0.87
Hourly flow rate (vph)	51	880	547	0	0	439
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			471			521
pX, platoon unblocked						
vC, conflicting volume	766	274			547	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	766	274			547	
tC, single (s)	6.9	7.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	0			100	
cM capacity (veh/h)	337	721			1025	

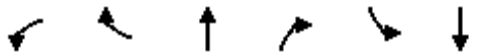
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	51	880	274	274	220	220
Volume Left	51	0	0	0	0	0
Volume Right	0	880	0	0	0	0
cSH	337	721	1700	1700	1700	1700
Volume to Capacity	0.15	1.22	0.16	0.16	0.13	0.13
Queue Length 95th (ft)	13	766	0	0	0	0
Control Delay (s)	17.6	131.7	0.0	0.0	0.0	0.0
Lane LOS	C	F				
Approach Delay (s)	125.4		0.0		0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	60.9		
Intersection Capacity Utilization	68.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR2	NBL2	NBT	NBR	SBL	SBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	395	11	30	5	108	10	403	108	40	25
Future Volume (vph)	395	11	30	5	108	10	403	108	40	25
Ideal Flow (vphpl)	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	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	0.97	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.89		1.00	0.99		1.00	0.85	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (prot)	1787	1645		1787	1855		1805	1573	1738	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	0.97	
Satd. Flow (perm)	1787	1645		1787	1855		1805	1573	1738	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.97	0.97	0.78	0.78
Adj. Flow (vph)	439	12	33	6	120	11	415	111	51	32
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0
Lane Group Flow (vph)	439	45	0	6	128	0	415	111	83	0
Confl. Peds. (#/hr)			2	2		1	1	2		1
Confl. Bikes (#/hr)								1		
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	0%
Turn Type	Split	NA		Prot	NA		Prot	Perm	Prot	
Protected Phases	7	7		1			5		8	
Permitted Phases					6			2		
Actuated Green, G (s)	23.5	23.5		1.0	15.3		21.7	36.0	18.0	
Effective Green, g (s)	23.5	23.5		1.0	15.3		21.7	36.0	18.0	
Actuated g/C Ratio	0.24	0.24		0.01	0.16		0.22	0.37	0.19	
Clearance Time (s)	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	
Lane Grp Cap (vph)	435	400		18	294		405	586	324	
v/s Ratio Prot	c0.25	0.03		0.00			c0.23		c0.05	
v/s Ratio Perm					c0.07			0.07		
v/c Ratio	1.01	0.11		0.33	0.43		1.02	0.19	0.26	
Uniform Delay, d1	36.5	28.4		47.4	36.7		37.4	20.4	33.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	45.5	0.1		10.6	1.0		51.2	0.2	1.9	
Delay (s)	82.0	28.5		58.0	37.7		88.6	20.6	35.4	
Level of Service	F	C		E	D		F	C	D	
Approach Delay (s)		77.0			38.6				35.4	
Approach LOS		E			D				D	

Intersection Summary			
HCM 2000 Control Delay	68.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	96.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection Sign configuration not allowed in HCM analysis.



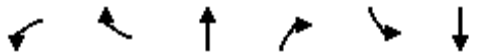
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	677	631	0	0	590
Future Volume (vph)	21	677	631	0	0	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frpb, ped/bikes	1.00	0.99	1.00			1.00
Flpb, ped/bikes	1.00	1.00	1.00			1.00
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1770	1560	3574			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1770	1560	3574			3574
Peak-hour factor, PHF	0.90	0.92	0.89	0.89	1.00	0.85
Adj. Flow (vph)	23	736	709	0	0	694
RTOR Reduction (vph)	0	25	0	0	0	0
Lane Group Flow (vph)	23	711	709	0	0	694
Confl. Peds. (#/hr)	1	3				
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	30.3	30.3	20.7			20.7
Effective Green, g (s)	30.3	30.3	20.7			20.7
Actuated g/C Ratio	0.51	0.51	0.34			0.34
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	893	787	1233			1233
v/s Ratio Prot	0.01		c0.20			0.19
v/s Ratio Perm		c0.46				
v/c Ratio	0.03	0.90	0.58			0.56
Uniform Delay, d1	7.4	13.5	16.1			16.0
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.0	13.6	2.0			1.9
Delay (s)	7.5	27.2	18.0			17.8
Level of Service	A	C	B			B
Approach Delay (s)	26.6		18.0			17.8
Approach LOS	C		B			B

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

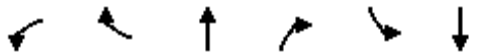
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1309	118	590
Future Volume (vph)	0	0	0	1309	118	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.5		4.5
Lane Util. Factor				0.88		0.95
Frt				0.85		1.00
Flt Protected				1.00		0.99
Satd. Flow (prot)				2814		3545
Flt Permitted				1.00		0.99
Satd. Flow (perm)				2814		3545
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.85	0.85
Adj. Flow (vph)	0	0	0	1471	139	694
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	1471	0	833
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type				Perm	Perm	NA
Protected Phases						6
Permitted Phases				2	6	
Actuated Green, G (s)				40.0		40.0
Effective Green, g (s)				40.0		40.0
Actuated g/C Ratio				1.00		1.00
Clearance Time (s)				4.5		4.5
Vehicle Extension (s)				3.0		3.0
Lane Grp Cap (vph)				2814		3545
v/s Ratio Prot						
v/s Ratio Perm				c0.52		0.23
v/c Ratio				0.52		0.23
Uniform Delay, d1				0.0		0.0
Progression Factor				1.00		1.00
Incremental Delay, d2				0.7		0.2
Delay (s)				0.7		0.2
Level of Service				A		A
Approach Delay (s)	0.0		0.7			0.2
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	4.5
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	45	783	498	0	0	382
Future Volume (vph)	45	783	498	0	0	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5			4.5
Lane Util. Factor	1.00	1.00	0.95			0.95
Frt	1.00	0.85	1.00			1.00
Flt Protected	0.95	1.00	1.00			1.00
Satd. Flow (prot)	1752	1568	3574			3574
Flt Permitted	0.95	1.00	1.00			1.00
Satd. Flow (perm)	1752	1568	3574			3574
Peak-hour factor, PHF	0.89	0.89	0.91	0.91	0.87	0.87
Adj. Flow (vph)	51	880	547	0	0	439
RTOR Reduction (vph)	0	34	0	0	0	0
Lane Group Flow (vph)	51	846	547	0	0	439
Heavy Vehicles (%)	3%	3%	1%	1%	1%	1%
Turn Type	Prot	Perm	NA			NA
Protected Phases	8		2			6
Permitted Phases		8				
Actuated Green, G (s)	40.2	40.2	20.8			20.8
Effective Green, g (s)	40.2	40.2	20.8			20.8
Actuated g/C Ratio	0.57	0.57	0.30			0.30
Clearance Time (s)	4.5	4.5	4.5			4.5
Vehicle Extension (s)	3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	1006	900	1061			1061
v/s Ratio Prot	0.03		c0.15			0.12
v/s Ratio Perm		c0.54				
v/c Ratio	0.05	0.94	0.52			0.41
Uniform Delay, d1	6.5	13.8	20.4			19.7
Progression Factor	1.00	1.00	1.00			1.00
Incremental Delay, d2	0.0	17.0	1.8			1.2
Delay (s)	6.6	30.8	22.2			20.9
Level of Service	A	C	C			C
Approach Delay (s)	29.5		22.2			20.9
Approach LOS	C		C			C

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1281	80	382
Future Volume (vph)	0	0	0	1281	80	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.5		4.5
Lane Util. Factor				0.88		0.95
Frt				0.85		1.00
Flt Protected				1.00		0.99
Satd. Flow (prot)				2814		3544
Flt Permitted				1.00		0.99
Satd. Flow (perm)				2814		3544
Peak-hour factor, PHF	0.92	0.92	0.89	0.89	0.85	0.85
Adj. Flow (vph)	0	0	0	1439	94	449
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	1439	0	543
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type				Perm	Perm	NA
Protected Phases						6
Permitted Phases				2	6	
Actuated Green, G (s)				40.0		40.0
Effective Green, g (s)				40.0		40.0
Actuated g/C Ratio				1.00		1.00
Clearance Time (s)				4.5		4.5
Vehicle Extension (s)				3.0		3.0
Lane Grp Cap (vph)				2814		3544
v/s Ratio Prot						
v/s Ratio Perm				c0.51		0.15
v/c Ratio				0.51		0.15
Uniform Delay, d1				0.0		0.0
Progression Factor				1.00		1.00
Incremental Delay, d2				0.7		0.1
Delay (s)				0.7		0.1
Level of Service				A		A
Approach Delay (s)	0.0		0.7			0.1
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	4.5
Intersection Capacity Utilization	65.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Peak Hour Warrant (Urban Areas)

Intersection: Strobridge Avenue/Stanton Avenue & I-580 WB Off-Ramp, Alameda County, CA
Scenario: Cumulative plus Project Conditions

Minor Street Volume = 698 (828) VPH

Figure 4C-3. Warrant 3, Peak Hour

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 1221 (880) VPH

★ ***AM Peak Hour***

★ ***PM Peak Hour***

A signal IS WARRANTED in the a.m. Peak Hour
A signal IS WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3