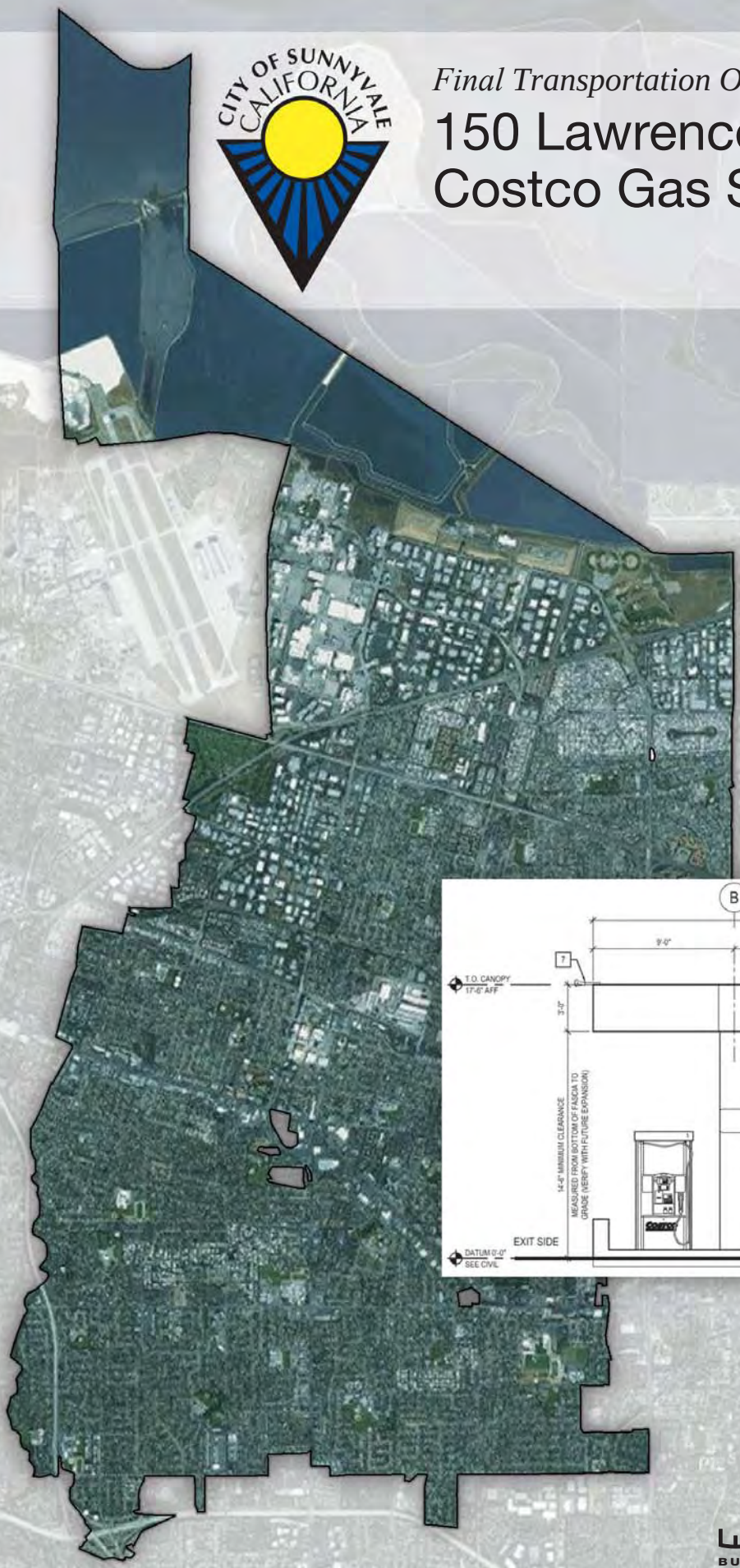
ATTACHMENT 6

Final Transportation Operations Analysis

150 Lawrence Station Road Costco Gas Station Expansion

September 2017



WOOD RODGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

150 Lawrence Station Road
Sunnyvale, CA

TRANSPORTATION OPERATIONS ANALYSIS

FINAL REPORT

Prepared For:

The City of Sunnyvale

Prepared By

WOOD RODGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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September 2017

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EXECUTIVE SUMMARY

This report has been prepared to present the results of a Transportation Operations Analysis (TOA) performed by Wood Rodgers, Inc. for the proposed 150 Lawrence Station Road Costco Gas Station Expansion (Project) in Sunnyvale, California. This analysis has been performed to determine any operational deficiencies the proposed Project may cause on surrounding transportation facilities and potential improvements that could be implemented to address any Project-related operational deficiencies. This TOA report was prepared in accordance with City of Sunnyvale and Santa Clara Valley Transportation Authority (VTA) guidelines.

There is currently a 137,450-square-foot Costco Wholesale building on the Project site which covers 25% of the lot. The Project proposes to add 10 fueling positions to the existing 20 fueling positions at the Costco Gasoline facility by expanding the fuel canopy from 5,024-square-feet to 10,676-square-feet (proposed expansion of 5,652-square-feet) on the southwest corner of the Project site.

PROJECT GENERATED TRIPS

New trips generated by the proposed Project were estimated using rates collected at the existing Costco fuel station and trip type percentages provided in the Kittelson & Associates, Inc. memorandum *Costco Gasoline Fuel Station Transportation Characteristics* (dated May 23, 2013). The proposed Project is anticipated to generate a total of 126 AM peak hour diverted trips (63 inbound, 63 outbound), 132 AM peak hour primary trips (66 inbound, 66 outbound), 154 PM peak hour diverted trips (77 inbound, 77 outbound), and 52 PM peak hour primary trips (26 inbound, 26 outbound) under typical “annual average” traffic demand conditions.

INTERSECTION OPERATIONS, PROJECT-RELATED DEFICIENCIES, AND IMPROVEMENTS

This TOA report analyzed eight (8) “study” intersections under “Existing”, “Existing plus Project”, “Background”, and “Background plus Project” AM and PM peak hour conditions. HCM 2000 based analysis was performed using TRAFFIX and Synchro software. CA-MUTCD based peak hour signal warrant-3 (urban areas) was also checked for unsignalized study intersections when applicable. Level-of-service standards and operational deficiency criteria used in this TOA were based on Santa Clara Valley Transportation Authority (VTA) and City of Sunnyvale guidelines.

The Kifer Road / San Zeno Way intersection is projected to operate at an unacceptable LOS “E” under “Existing” and “Existing plus Project” PM peak hour conditions and LOS “F” under “Background” and “Background plus Project” PM peak hour conditions. CA-MUTCD based peak hour signal warrant-3 was not found to be met at study-area unsignalized intersections.

Based on the VTA and City of Sunnyvale criteria used in this TOA, the Project is not projected to cause any operational deficiencies at study area intersections.

SITE ACCESS AND CIRCULATION

The proposed Project would gain access to the nearby roadway network via four (4) existing Project Driveways:

- **Costco Entrance (Kifer Rd and Costco Entrance)**: A signalized driveway in the north-south direction that fronts Kifer Road east of the Kifer Road and Lawrence Station Road intersection.
- **North Costco Driveway (Lawrence Station Road and North Costco Driveway)**: A stop controlled driveway along Lawrence Station Road. Ingress and egress movements are allowed.

- **Central Costco Driveway (Lawrence Station Road and Central Costco Driveway)**: A stop controlled driveway along Lawrence Station Road. Ingress and egress movements are allowed. This is the closest driveway to the Costco fueling stations that allows entry.
- **South Costco Driveway (Lawrence Station Road and South Costco Driveway)**: An exit-only, stop controlled driveway located at the south end of Lawrence Station Road near the driveway to the Lawrence Caltrain Station. It is just southwest of the Costco fueling stations and is used by vehicles exiting the fueling stations.

Additional fuel pump queueing as a result of demand for the 10 proposed fueling positions is anticipated to, at times, extend into the two parking aisles just north of the fuel pump queuing lanes during the PM peak hour. Assuming an even distribution of vehicles, worst-case queues would extend through and beyond the Central Costco Driveway by four (4) additional vehicles (two vehicles in each of the two parking aisles north of the Central Costco Driveway). As such, this TOA recommends adding "Keep Clear" pavement markings on the Central Costco Driveway at these locations to prevent queued vehicles from blocking the driveway.

ON-SITE PARKING

The fuel station expansion would eliminate nine (9) standard parking stalls on the site (721 existing stalls, 712 proposed stalls) and the number of handicap parking stalls would remain the same (28 existing and proposed stalls). Due to the nature of the proposed Project, traffic generated by the new fueling positions is anticipated to have minimal effect on parking demand. Therefore, the proposed number of parking stalls is foreseen as adequate for the site.

PROJECT EFFECTS ON TRANSIT OPERATIONS

Project-related change in bus route delay in the study area were estimated by summing projected increases in vehicle delay along the bus routes. The Project was found to have little to no effect on shuttle Route 822 travel times but was projected to increase delay for Bus Route 328 by up to 11.0 seconds through the Project study area during the AM and/or PM peak hours. The projected small increases in transit vehicle delay is not anticipated to affect the overall schedule of the transit routes.

PROJECT EFFECTS ON PEDESTRIAN AND BICYCLE FACILITY OPERATIONS

No Project-related change in pedestrian or bicycle facility operations is anticipated as a result of increased vehicular traffic due to the Project.

VEHICLE QUEUING

Queuing analysis for left-turn movements was performed at all signalized study intersection approaches that contained one or more left-turn pockets. Queuing analysis for overall approach queues was performed for two-way stop-controlled intersections. Project generated trips are projected to cause queuing deficiencies at the following locations, under the specified conditions:

- Intersection #2 – Kifer Road / Lawrence Expressway westbound left-turn movement under "Existing plus Project" and "Background plus Project" PM peak hour conditions.

Lengthening the left-turn pockets to address Project related deficiencies would likely not be feasible due to site constraints. All Project related queueing deficiencies could potentially be improved by implementation of the City of Sunnyvale's Intelligent Transportation System (ITS) strategies and projects. The Project would be required to contribute to these ITS strategies. The queueing deficiencies identified in this report are operational only and do not rise to the level of a California Environmental Quality Act (CEQA) impact.

1. INTRODUCTION

This report has been prepared to present the results of a Transportation Operations Analysis (TOA) performed by Wood Rodgers, Inc. for the proposed 150 Lawrence Station Road Costco Gas Station Expansion (Project) in Sunnyvale, California. This analysis has been performed to determine any operational deficiencies the proposed Project may cause on surrounding transportation facilities and potential improvements that could be implemented to address any Project-related operational deficiencies. This TOA report was prepared in accordance with City of Sunnyvale and Santa Clara Valley Transportation Authority (VTA) guidelines. This introduction outlines project description, study area, analysis scenarios, analysis methods, deficiency criteria, and organization of the overall report.

1.1 PROJECT DESCRIPTION

The Project site is generally located southeast of the Kifer Road / Lawrence Station Road intersection in Sunnyvale, CA (City). The site is bound by the Costco Entrance road to the east, the Lawrence Caltrain Station to the south, Lawrence Station Road to the west, and Kifer Road to the north. The Project site location is shown on the map in **Figure 1**.

The most recent proposed Project site plan (by MG2, dated February 1, 2017) is shown in **Figure 2**. There is currently a 137,450-square-foot Costco Wholesale building on the Project site which covers 25% of the lot. The Project proposes adding 10 additional fueling positions to the existing 20 fueling positions at the Costco Gasoline facility by expanding the fuel canopy from 5,024-square-feet to 10,676-square-feet (proposed expansion of 5,652-square-feet) on the southwest corner of the Project site. The expansion would eliminate nine (9) standard parking stalls on the site (721 existing stalls, 712 proposed stalls) and the number of handicap parking stalls would remain the same (28 existing and proposed stalls).

The proposed Project site would continue to access the adjacent roadway network via the three (3) driveways on Lawrence Station Road and the entrance on Kifer Road. No new Project access driveways are proposed.

1.2 STUDY AREA

The study area generally extends along Kifer Road between San Zeno Way and the Costco Entrance, and along Lawrence Expressway between Kifer Road and the Lawrence Caltrain Station. Study facilities include the intersections discussed below.

1.2.1 INTERSECTIONS

Intersections were selected for analysis using *VTA TIA Guidelines* (October 2014) criteria thresholds, engineering judgment, and coordination with City staff. Intersections that may experience operational deficiencies from the proposed Project, based on a preliminary trip generation and distribution, were included. The list of study intersections was reviewed and approved by City staff before beginning this TOA. The following eight (8) existing study intersections were analyzed in this TOA:

1. Kifer Road / San Zeno Way*
2. Kifer Road / Lawrence Expressway
3. Kifer Road / Lawrence Station Road*
4. Kifer Road / Costco Entrance
5. North Costco Driveway / Lawrence Station Road*
6. Central Costco Driveway / Lawrence Station Road*

ATTACHMENT 6

Figure 1 - Project Location and Vicinity Map
150 Lawrence Station Road TOA Study Intersections
Sunnyvale, CA
September, 2017

NORTH

0 250 500
Feet

WOOD RODGERS

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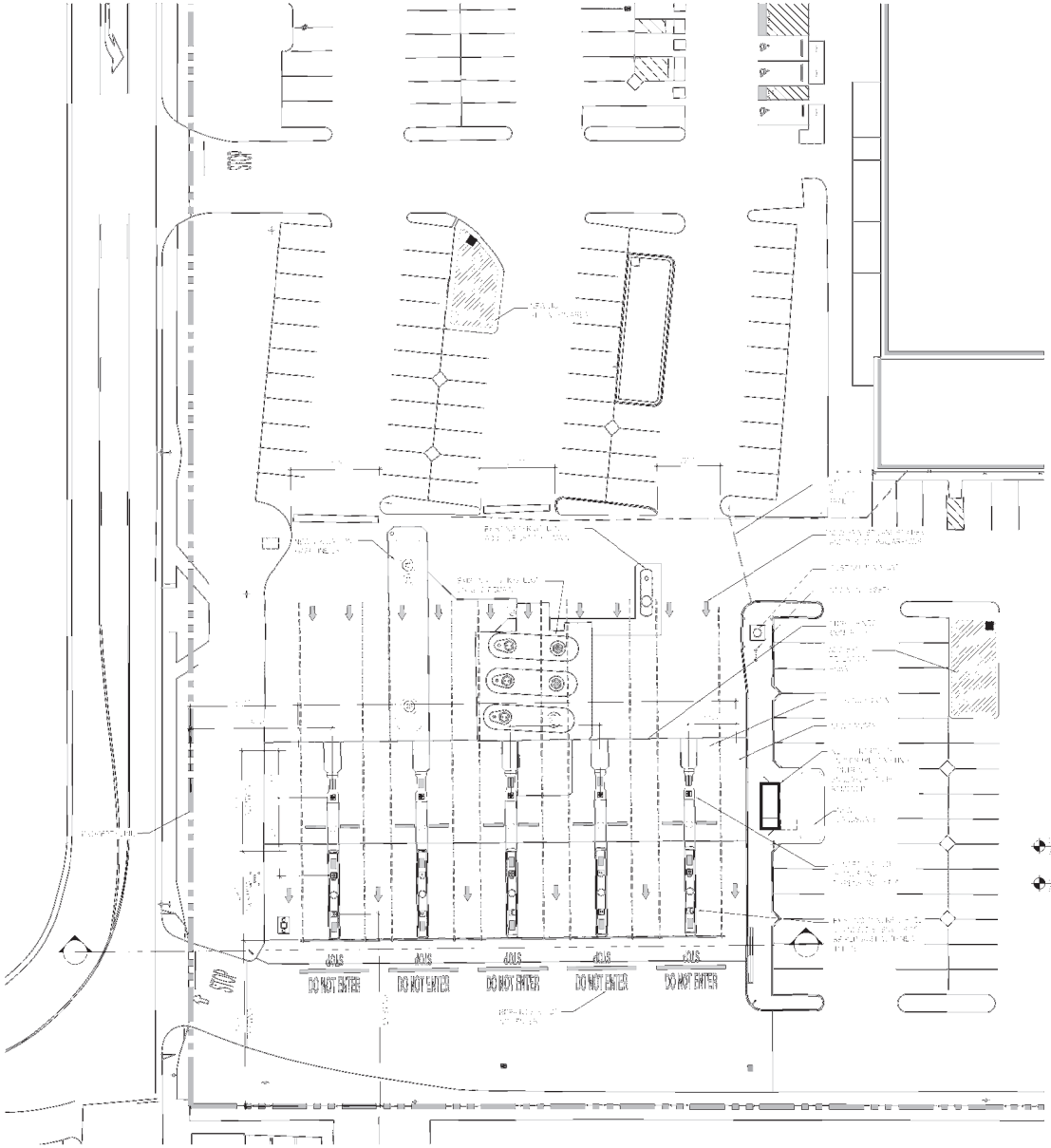
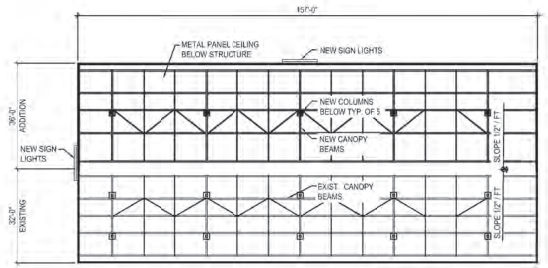
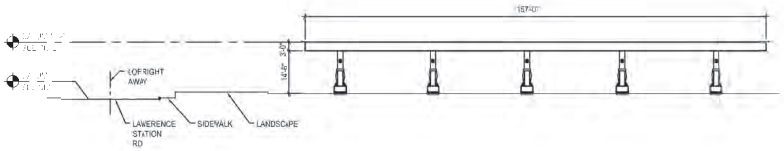


1 OVERALL SITE PLAN
SCALE: 1"=20'



2 PRELIMINARY ROOF PLAN
SCALE: 1"=20'



3 SITE SECTION
SCALE: 1"=20'

0 10' 20' 40' 80'

COSTCO WHOLESALE

SUNNYVALE, CA
#423

150 LAWRENCE STATION ROAD
SUNNYVALE, CA 94086

1101 Second Ave, Ste 100
Seattle, WA 98101

206 962 6500
MG2.com

MG2

94-0330-34
FEBRUARY 1, 2017

ENLARGED SITE PLAN

DD11-01A

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COSTCO WHOLESALE

ENLARGED SITE PLAN

SUNNYVALE, CALIFORNIA

FEBRUARY 2, 2017

Figure 2. Project Site Plan

7. South Costco Driveway / Lawrence Station Road*
8. Caltrain Driveway / Lawrence Station Road*

Unsignalized study intersections are indicated with an "*" above. All other study intersections are signalized. The locations of the above study intersections are also shown on **Figure 1**.

1.2.2 Pedestrian, Bicycle, and Transit Facilities

This TOA analyzes operations of pedestrian, bicycle, and transit facilities (VTA shuttle, light rail transit (LRT), Caltrain, bus services) within Project site vicinity under both without-Project and with-Project conditions.

1.3 Analysis Scenarios

The eight (8) study intersections were evaluated under AM and PM peak hour conditions for the following scenarios:

- **Existing Conditions:** Existing traffic volumes from counts.
- **Existing plus Project Conditions:** Existing traffic volumes plus traffic projected to be generated by the proposed Project.
- **Background Conditions:** Existing volumes plus traffic from "approved but not yet constructed or occupied" developments within an approximately one mile radius of the Project site. Trips generated by the Project are **not** included.
- **Background plus Project Conditions:** Background volumes plus traffic projected to be generated by the proposed Project.

Per direction from the City, this Project does not require a full Transportation Impact Analysis. Therefore, a separate Cumulative and Cumulative plus Project analysis is not seen as necessary for this TOA preparation. Please note that the Ryder Street Extension/New Gordon Avenue realignment improvement that is planned roughly opposite of the main Costco entrance on Kifer Road is not scheduled for completion until long-term Cumulative conditions. Therefore, the Ryder Street Extension/New Gordon Avenue realignment will not be assumed constructed under near-term Background conditions or analyzed in this TOA.

1.4 Analysis Methods

Traffic operations in this TOA have been quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment, representing progressively worsening traffic operations. LOS "A" represents free-flow conditions with little to no delays, while LOS "F" represents jammed or grid-lock conditions.

1.4.1 Signalized Intersections

LOS has been calculated for signalized intersections using methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition, 2000* (HCM-2000), consistent with the *VTA Traffic Level of Service Analysis Guidelines*. For signalized intersections, the "average" intersection delay per vehicle, including all intersection movements, has been calculated and reported using TRAFFIX analysis software. TRAFFIX software was used to analyze the Kifer Road/Costco Entrance and the Kifer Road/Lawrence Expressway intersections. The calculated signalized intersection delays correspond to the LOS designations shown in **Table 1** which were derived from Exhibit 16-2 of HCM 2000 and are consistent with *VTA Traffic Level of Service Analysis Guidelines*.

Table 1. HCM-2000 Based Signalized Intersection LOS Thresholds

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Free-flow conditions with negligible to minimal delays. Excellent progression with most vehicles arriving during the green phase and not having to stop at all. Nearly all drivers find freedom of operation.	delay ≤ 10.0
B+	Good progression with slight delays. Short cycle-lengths typical. Relatively more vehicles stop than under LOS "A". Vehicle platoons are formed. Drivers begin to feel somewhat restricted within groups of vehicles.	10.0 < delay ≤ 12.0
B		12.0 < delay ≤ 18.0
B-		18.0 < delay ≤ 20.0
C+	Relatively higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, although many still pass through without stopping. Most drivers feel somewhat restricted.	20.0 < delay ≤ 23.0
C		23.0 < delay ≤ 32.0
C-		32.0 < delay ≤ 35.0
D+	Somewhat congested conditions. Longer but tolerable delays may result from unfavorable progression, long cycle lengths, and/or high volume-to-capacity ratios. Many vehicles are stopped. Individual cycle failures may be noticeable. Drivers feel restricted during short periods due to temporary back-ups.	35.0 < delay ≤ 39.0
D		39.0 < delay ≤ 51.0
D-		51.0 < delay ≤ 55.0
E+	Congested conditions. Significant delays result from poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures occur frequently. There are typically long queues of vehicles waiting upstream of the intersection. Driver maneuverability is very restricted.	55.0 < delay ≤ 60.0
E		60.0 < delay ≤ 75.0
E-		75.0 < delay ≤ 80.0
F	Jammed or grid-lock type operating conditions. Generally considered to be unacceptable for most drivers. Zero or very poor progression, with over-saturation or high volume-to-capacity ratios. Several individual cycle failures occur. Queue spillovers from other locations restrict or prevent movement.	delay > 80.0
Source: Traffic Level of Service Analysis Guidelines, June 2003; HCM-2000 Exhibit 16-2.		

1.4.2 UNSIGNALIZED INTERSECTIONS

LOS has been calculated for unsignalized intersections using methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition, 2000* (HCM-2000), consistent with the *VTA Traffic Level of Service Analysis Guidelines*. For two-way-stop-controlled (TWSC) unsignalized intersections, the "worst" movement delay, i.e. delay per vehicle of the intersection's worst operating movement, has been calculated and reported using Synchro analysis software. The calculated unsignalized intersection delays correspond to the LOS designations shown in **Table 2**, which were derived from Exhibits 17-2 and 17-22 of HCM 2000 and are consistent with *VTA Traffic Level of Service Analysis Guidelines*.

Table 2. HCM-2000 Based Unsignalized Intersection LOS Thresholds

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Free-flow conditions with negligible to minimal delays.	delay ≤ 10.0
B	Good progression with slight delays.	10.0 < delay ≤ 15.0
C	Relatively higher delays.	15.0 < delay ≤ 25.0
D	Somewhat congested conditions with longer but tolerable delays.	25.0 < delay ≤ 35.0
E	Congested conditions with significant delays.	35.0 < delay ≤ 50.0
F	Jammed or grid-lock type operating conditions.	delay > 50.0
Source: Traffic Level of Service Analysis Guidelines, June 2003; HCM-2000 Exhibit 17-2 and 17-22.		

1.4.3 Intersection Parameters

For all intersections modeled in TRAFFIX software, default peak hour factors and saturation flow rates were used as defined in the *VTA Traffic Level of Service Analysis Guidelines*. For all intersections modeled in Synchro software, intersection peak hour factors obtained from counts were used. Saturation flow rates for intersections modeled in Synchro were left at the default value of 1900 vehicles per hour per lane. The capacity of movements at stop-controlled intersections were left at default Synchro values (1700 vehicles per hour per lane for free movements).

1.5 Level of Service Standards and Operational Deficiency Criteria

1.5.1 Intersection Level of Service Operational Deficiency Criteria

1.5.1.1 Signalized Intersections

The City of Sunnyvale currently utilizes LOS "D" as the minimum acceptable LOS threshold for signalized intersections within the City during the AM and PM peak periods, except for intersections that have been designated as regionally significant. The Project would be considered to cause an operational deficiency at City (not regionally significant) signalized intersections if one of the following criteria is met:

1. If the addition of Project generated traffic to an intersection causes the AM or PM peak hour LOS of the intersection to degrade from an acceptable LOS "D" or better to an unacceptable LOS "E" or worse, then there is an operational deficiency.
2. If an intersection operates at an unacceptable AM or PM peak hour LOS "E" or worse without the addition of project generated traffic, and the addition of project generated traffic increases the average control delay for critical movements by four (4) or more seconds <u>and</u> increases the critical volume-to-capacity (V/C) ratio by 0.01 or more, then there is an operational deficiency.

The City of Sunnyvale and VTA currently utilize LOS "E" as the minimum acceptable LOS threshold for signalized intersections that have been designated as regionally significant by the City, that have been designated as part of the Congestion Management Plan (CMP), or which are County intersections. Regionally significant intersections within the study area include Kifer Road/Lawrence Expressway. The Project would be considered to cause an operational deficiency at regionally significant City intersections, CMP intersections, and County intersections if one of the following criteria is met:

1. If the addition of project generated traffic to an intersection causes the AM or PM peak hour LOS of the intersection to degrade from an acceptable LOS "E" or better to an unacceptable LOS "F", then there is an operational deficiency.
2. If an intersection operates at an unacceptable AM or PM peak hour LOS "F" without the addition of project generated traffic, and the addition of project generated traffic increases the average control delay for critical movements by four (4) or more seconds <u>and</u> increases the critical volume-to-capacity (V/C) ratio by 0.01 or more, then there is an operational deficiency.
    a. If the addition of project traffic reduces the amount of average control delay for critical movements (i.e. a negative change in delay) and the project increases the critical V/C by 0.01 or more, then there is an operational deficiency.

1.5.1.2 Unsignalized Intersections

The City of Sunnyvale does not currently have an officially adopted operational deficiency criterion for unsignalized intersections. Based on previously approved traffic studies, operational deficiencies

have been defined to occur when the addition of project generated traffic causes the average intersection delay for all-way stop controlled intersections, or worst movement delay for two-way stop controlled intersections, to degrade to unacceptable levels (LOS "E" or worse for City intersections and LOS "F" for regionally significant roadways) and the intersection satisfies the CA MUTCD peak-hour volume signal warrant.

1.5.1.3 Signal Warrants

In order to determine whether traffic signals should be installed at currently unsignalized intersections, a supplemental *California Manual on Uniform Traffic Control Devices*, dated November 2014 (*CA-MUTCD*) based traffic signal warrant analysis was also completed. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection location. The CA-MUTCD signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, location of school areas, frequency and type of collisions, etc. CA-MUTCD indicates that "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." This TOA evaluated CA-MUTCD based Peak-Hour-Volume-based Warrant 3 (Urban Areas) as a representative type of warrant analysis. Note that based on discussion with City staff, signal warrants were not analyzed at the Kifer Road intersections with San Zeno Way and Lawrence Station Road (study intersections #1 and #3) due to their close proximity to the Kifer Road / Lawrence Expressway signalized intersection.

1.5.2 QUEUING

Vehicle queueing deficiencies were analyzed at all study intersections. 95th percentile queue lengths were reported for all left-turn movements at all signalized study intersections and overall approach queues were reported for two-way stop-controlled study intersections. 95th percentile queues essentially represent a worst-case queue length that will be reached or exceeded only 5% of the time during the peak hour (i.e. 95% of queues would be less than this length). Based on discussion with City staff, queueing deficiencies were considered to occur when one of the following conditions is met:

1. A queuing deficiency would occur when the addition of Project trips causes the 95th percentile queue to exceed available storage length (when the 95th percentile queue did not exceed storage length before the addition of Project trips).
2. Where the 95th percentile queue already exceeds the turn pocket length under "no Project" conditions, a queuing deficiency would occur if Project traffic lengthens the 95th percentile queue by 25 feet or more.

1.6 REPORT ORGANIZATION

The remainder of this report is divided into the following chapters:

- **Chapter 2: Existing Conditions** – Describes existing conditions and operations of the study area intersections, transit system, pedestrian facilities, and bicycle facilities.
- **Chapter 3: Existing Plus Project Conditions** – Describes the methods used to estimate and distribute project generated traffic and the resulting study area operations.
- **Chapter 4: Background Conditions** – Describes projected conditions and operations of study area facilities under Background (without Project) conditions.
- **Chapter 5: Background Plus Project Conditions** – Describes projected conditions and operations of study area facilities under Background plus Project conditions.

- **Chapter 6: Site Access and Circulation** – Describes site access and circulation for the Project site.
- **Chapter 7: Potential Effects on Transit, Bicycle, and Pedestrian Facilities and Services** – Describes potential effects the proposed project will have on the transit system, pedestrian facilities, and bicycle facilities.
- **Chapter 8: Operational Deficiencies and Recommended Improvements** – Describes the projected Project-related operational deficiencies at study area facilities (if any) and presents recommendations for improvements.
- **Chapter 9: Queuing Analysis, Deficiencies, and Recommended Improvements** – Describes vehicle queuing analysis for the study intersections, the projected operational queue deficiencies caused by the addition of project trips to study intersections, and presents recommendations for improvements.

2. EXISTING CONDITIONS

This chapter describes the existing roadway network, transit services, pedestrian facilities, and bicycle facilities within the study area. It also presents existing turning movement volumes at study intersections and TRAFFIX/Synchro calculated intersection delays and LOS.

2.1 EXISTING ROADWAY NETWORK

This section provides descriptions of the study area roadways.

Kifer Road is a four-lane east-west collector which runs from Fair Oaks Avenue to Bowers Avenue (where Kifer Road becomes Walsh Avenue). The posted speed limit of Kifer Road through the study area is 40 miles per hour (mph).

Lawrence Expressway (County Route G2) is a six to eight-lane north-south expressway that runs from Saratoga Avenue (where it becomes Quito Road) to SR 237 (where it becomes Caribbean Drive). There are six-lanes between Saratoga Avenue and Stevens Creek Boulevard, while there are eight total lanes (three mixed-flow lanes and one HOV lane in both the northbound and southbound directions) between Stevens Creek Boulevard and SR 237. Lawrence Expressway has a posted speed limit of 50 mph through the study area. Lawrence Expressway is considered a regionally significant roadway.

San Zeno Way is a two-lane north-south local roadway, west of Lawrence Expressway, that connects Kifer Road and Lawrence Expressway to local businesses and the Lawrence Caltrain Station. San Zeno Way has a posted speed limit of 25 mph and transitions into Lawrence Station Road as it goes from the main north-south movement to a short east-west movement and approaches the east side of Lawrence Expressway.

Lawrence Station Road is a two-lane north-south local roadway with a two-way-center-turn-lane, east of Lawrence Expressway, that connects Kifer Road and Lawrence Expressway to local businesses and the Lawrence Caltrain Station. Lawrence Station Road has a posted speed limit of 25 mph and transitions into San Zeno Way as it goes from north-south to east-west.

Costco Entrance is a four-lane driveway that connects Kifer Road vehicular traffic to the Costco parking lot and Sweet Tomatoes restaurant. The north leg of the Kifer Road intersection with Costco Entrance currently does not exist and there is active construction on the parcels north of Kifer Road across from Costco Entrance (where the north leg of the intersection will eventually be). There is no posted speed limit for this connection to the parking lot.

North Costco Driveway is an entrance to and an exit from the Costco parking lot along Lawrence Station Road.

Central Costco Driveway is an entrance to and an exit from the Costco parking lot along Lawrence Station Road.

South Costco Driveway is an exit only driveway from the Costco parking lot along Lawrence Station Road.

Caltrain Driveway is a full access driveway from the Lawrence Station Caltrain Station located south of Costco. While the Caltrain Driveway is located very close to the South Costco Driveway, it was assumed for this study that the South Costco Driveway and Caltrain Driveway formed two separate, closely-spaced driveways with Lawrence Station Road.

2.2 PEDESTRIAN FACILITIES

Adjacent to or nearby the project site, sidewalks are provided in the following locations:

- South side of Kifer Road
- East side and west side of Lawrence Expressway
- West side of San Zeno Way and east side of Lawrence Station Road, including the south side where the two roads connect
- West side of the Costco Entrance, up to the first driveway to Sweet Tomatoes

Pedestrian crosswalks with push buttons exist on all legs of the Kifer Road / Lawrence Expressway intersection. Similarly, push buttons exist on all three legs of the Kifer Road / Costco Entrance intersection.

2.3 BICYCLE FACILITIES

The *VTA Bicycle Technical Guidelines* (December 2012) refers to the Caltrans Highway Design Manual (HDM), Chapter 1000 for standards on designing bicycle facilities. The Caltrans HDM classifies bikeways as follows:

Class I Bikeway (Bike Path) – Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized.

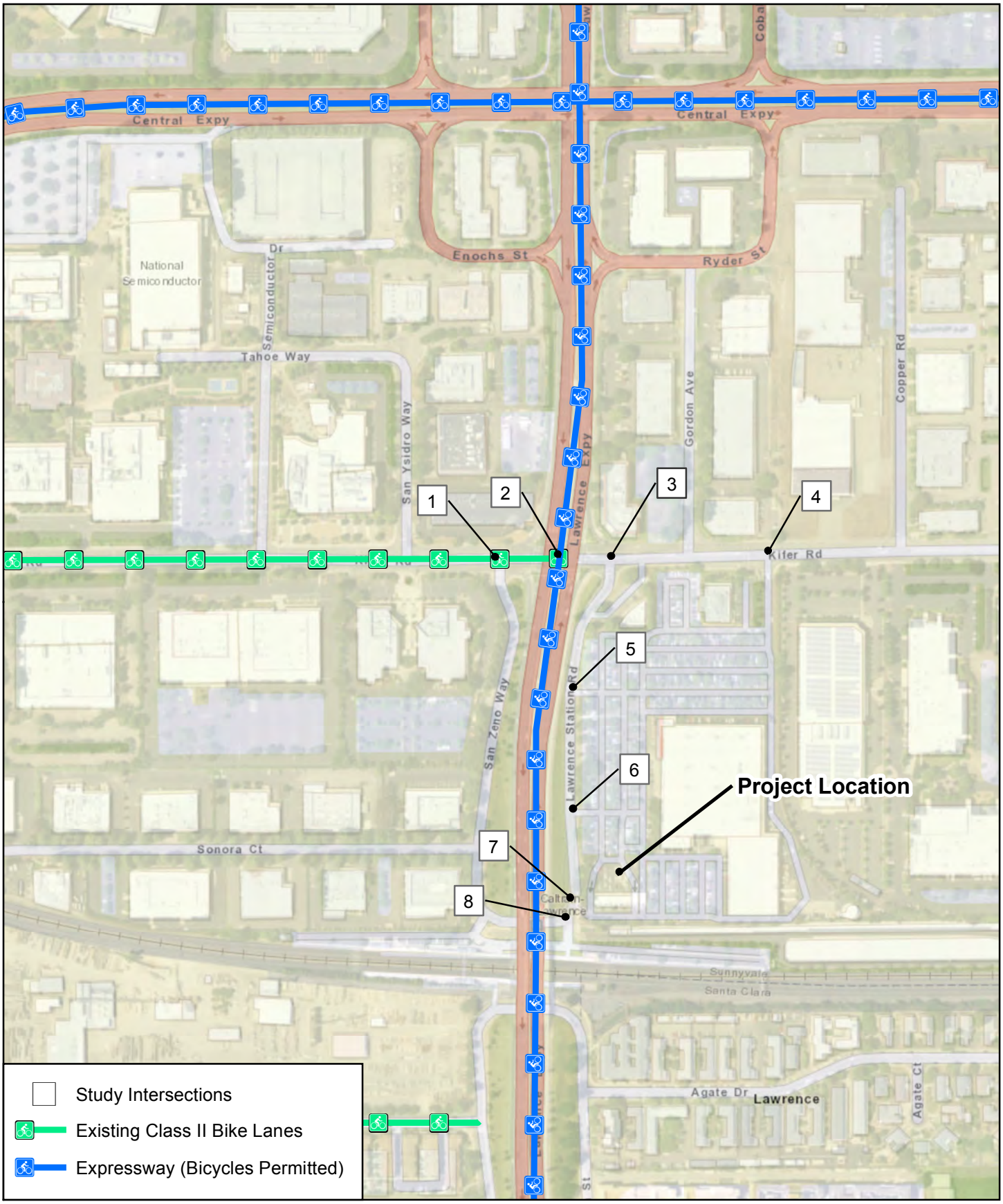
Class II Bikeway (Bike Lane) – Provides a striped lane for one-way bicycle travel on a street or highway. These lanes are generally adjacent to the outside vehicular travel lane and are marked by special lane marking and signs.

Class III Bikeway (Bike Route) – Provides for shared use with bicycle or motor vehicle traffic, typically on lower volume roadways. Class III bikeways are typically designated by signs and are used to provide continuity to other bicycle facilities.

According to the City of Sunnyvale Bicycle Map (dated May 5, 2017), within the Project study area, there is a Class II Bikeway along Kifer Road west of the Kifer Road / Lawrence Expressway intersection. East of the Kifer Road / Lawrence Expressway intersection, the Kifer Road bicycle lane does not exist and the roadway receives an “alert” street rating for bicyclists.

Lawrence Expressway is a bicycle permitted roadway, however it is not striped as a bicycle lane and does not have the low vehicular volumes usually associated with a Class III Bikeway.

There are no Class I bikeways near the Project site. For all other Project study area roadways it can be assumed that bicycles are allowed to share the roadway with vehicles. Existing Project study area bicycle facilities are shown in **Figure 3**.



Existing Project Study Area Bicycle Facilities
150 Lawrence Station TOA
Sunnyvale, CA
September 2017

0 250 500
Feet

NORTH

WOOD RODGERS

Figure 3

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2.4 EXISTING TRANSIT SERVICE

Existing transit service in the Project study area is provided by the Santa Clara Valley Transportation Authority and Caltrain. The corresponding transit services are shown in **Figure 4** and are described in the following paragraphs.

2.4.1 VTA BUS SERVICE

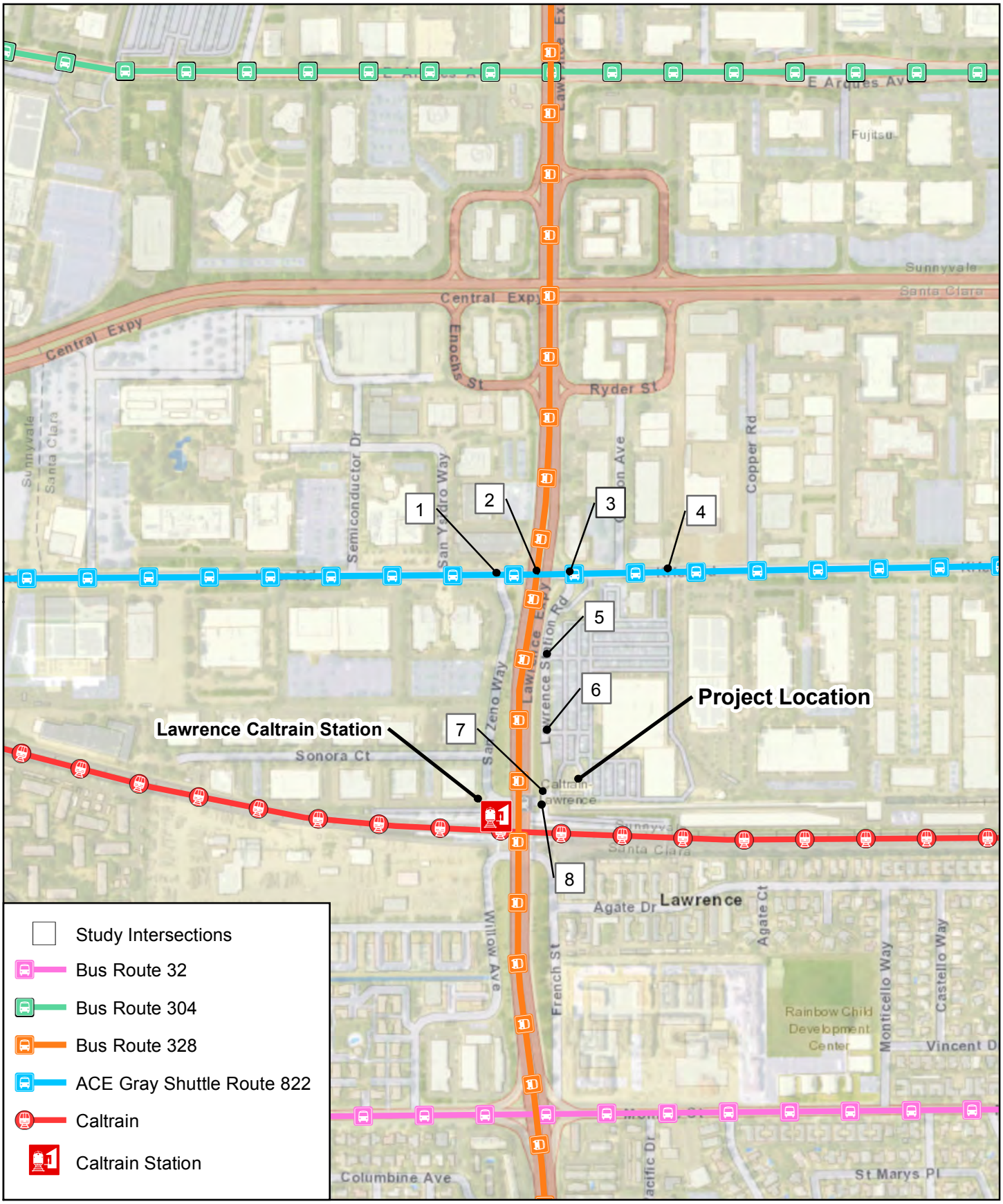
VTA operates bus service along Route 328, Route 304, Route 32, and Route 822 through and/or nearby the project study location. A summary of each local route is provided below:

Route 328 is a limited stop bus route that runs from Almaden Expressway and Camden Avenue in San Jose to the Lockhead Martin Transit Center in Sunnyvale (As noted on the VTA website, there are a limited number of stops in the industrial area where the project site exists). There is a bus stop on the northeast corner of Lawrence Expressway and Kifer Road in the northbound direction and there is a bus stop on the northwest corner of Lawrence Expressway and Kifer Road in the southbound direction. The aforementioned stops do not have times listed on the VTA website. However, the stops located at Lawrence Expressway and Arques Avenue (approximately 0.5-miles from the project site) are listed, thus the times of the Lawrence Expressway and Kifer Road stops would be very similar. Route 328 runs northbound in the AM hours and has two stops at Lawrence Expressway and Arques Avenue at 6:53 AM and 8:27 AM. Similarly, Route 328 runs southbound in the PM hours and has two stops at Lawrence Expressway and Arques Avenue at 5:12 PM and 6:16 PM. Route 328 does not operate on Saturday or Sunday.

Route 304 is a limited stop bus route that runs from the Santa Teresa LRT Station in San Jose to the Sunnyvale Transit Center in Sunnyvale. Route 304 runs along Arques Avenue approximately 0.5-miles from the project site. Similar to Route 328, Route 304 has a limited number of stops in the industrial area where the project site exists, and it also has a stops located at Arques Avenue and Lawrence Expressway. Route 304 runs northbound in the AM hours and has four stops at Arques Avenue and Lawrence Expressway at 6:52 AM, 7:22 AM, 7:56 AM, and 8:38 AM. Similarly, Route 304 runs southbound in the PM hours and has four stops at Arques Avenue and Lawrence Expressway at 3:41 PM, 4:10 PM, 4:58 PM, and 5:48 PM. Route 304 does not operate on Saturday or Sunday.

Route 32 is a community bus route that runs from the Santa Clara Transit Center in Santa Clara to the San Antonio Transit Center in Mountain View. Route 32 runs along Reed Avenue-Monroe Street approximately 0.5-miles from the project site. Route 32 has stops along eastbound Reed Avenue near Lawrence Expressway and eastbound Monroe Street near Pacific Drive. Route 32 has a stop along westbound Reed Avenue near Willow Avenue. Since the aforementioned stops do not have times listed on the VTA website, stops within the vicinity were utilized. The Project area stops are located approximately halfway between the nearby Reed Avenue / Evelyn Avenue stop and the Monroe Street / Bowers Avenue stop, therefore the times would be between their stop times. In the eastbound direction, Route 32 has 27 separate bus times with 30-minute headways during the weekday; similarly Route 32 has nine (9) separate bus times with 1-hour headways on Saturdays. In the westbound direction, Route 32 has 27 separate bus times with 30-minute headways during the weekday; similarly Route 32 has nine (9) separate bus times with 1-hour headways on Saturdays. Route 32 does not operate on Sundays.

Route 822 is the ACE Gray Line South Sunnyvale Shuttle that runs from the ACE Great America Station to the Kifer Road / Wolfe Road intersection. Route 822 runs along Kifer Road within the study area and has a stop in the eastbound direction at Kifer Road / San Ysidro Way, and a stop in the westbound direction at Kifer Road / Copper Road. Both bus stops are close to the Kifer Road / Semiconductor Drive time listed on the VTA website, which has four southbound AM bus stop times



Existing Project Study Area Transit Services
150 Lawrence Station TOA
Sunnyvale, CA
September 2017

0 400 800
Feet

NORTH

Figure 4

WOOD RODGERS

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of 6:44 AM, 7:59 AM, 9:04 AM, and 9:51 AM, and four northbound PM bus stop times of 3:14 PM, 4:12 PM, 5:08 PM, and 6:12 PM. Route 822 does not operate on Saturday or Sunday.

2.4.2 CALTRAIN SERVICE

Caltrain is a commuter rail line that runs between San Francisco and Santa Clara County. The nearest Caltrain station is the Lawrence Caltrain Station, which is located directly south of the Costco parking lot. The Lawrence Caltrain Station offers the following:

- 3 Shuttles (Including bus stops within walking distance):
    - Bowers-Walsh Shuttle
    - Duane Avenue Shuttle
    - Mission Shuttle
- Wheelchair Accessibility
- Bicycle Parking
    - 18 Bicycle Racks
    - 24 Lockers
- Parking
    - 122 Spaces (paid through ticket vending machine)
- 4 Ticket Vending Machines

The Lawrence Caltrain Station is utilized by local, limited stop, and baby bullet trains. The northbound and southbound weekday AM and PM peak periods have approximately a 30-minute headway; the off-peak hours have approximately a 60-minute headway. On the weekends, the headways in both the northbound and southbound directions are approximately 60-minutes, with Saturday extending its service times slightly longer than Sunday.

2.5 EXISTING INTERSECTION VOLUMES AND LANE GEOMETRICS

Project study intersection traffic operations were evaluated for the AM and PM peak hours under existing conditions. The AM peak hour is defined as the highest one hour of traffic flow counted between 7:00 AM and 9:00 AM on a typical weekday, and the PM peak hour is defined as the highest one hour of traffic flow counted between 4:00 PM and 6:00 PM on a typical weekday.

Wood Rodgers conducted new AM and PM peak hour vehicular, pedestrian, and bicycle traffic counts at the following study intersections on the dates shown below:

- Kifer Road / San Zeno Way (Tuesday, May 9, 2017)
- Kifer Road / Lawrence Expressway (Tuesday, May 9, 2017)
- Kifer Road / Lawrence Station Road (Tuesday, May 9, 2017)
- Kifer Road / Costco Driveway (Tuesday, June 6, 2017)
- Lawrence Station Road / North Costco Driveway (Tuesday, May 9, 2017)
- Lawrence Station Road / Central Costco Driveway (Tuesday, May 9, 2017)
- Lawrence Station Road / South Costco Driveway (Tuesday, May 9, 2017)

Note: Traffic volumes at the Kifer Road / Costco Driveway intersection were counted at a later date than the other intersections because the adjacent Kifer Road / Gordon Avenue intersection was mistakenly counted on the original May 9, 2017 count day instead. The last day of school was June 7th or 8th (depending on the grade) for students in the Sunnyvale School District and June 9th for students in the Santa Clara Unified School District. Since the Kifer Road / Costco Driveway counts were performed during the last week of school, they were compared and balanced (if necessary) against the adjacent counts from Kifer Road / Gordon Avenue and Kifer Road / Lawrence Station Road intersections to ensure all counts were consistent and represented typical weekday conditions with schools in session.

Peak hour internal circulation data was collected illustrating where vehicles go after leaving the Costco fuel station (i.e. exit to Costco Entrance driveway, exit to Lawrence Station Road, exit to San Zeno Road, or return to Costco parking lot). Peak hour queuing data at individual gas pump lines was also collected. Internal circulation and queuing counts were both performed on Tuesday, May 9, 2017. **Figure 5** illustrates existing intersection lane geometrics and control and **Figure 6** illustrates "Existing" conditions study intersection traffic volumes. Study intersection, internal circulation, and gas pump queueing raw count sheets are included in **Appendix G**.

2.6 "EXISTING" INTERSECTION OPERATIONS

Table 3 presents existing study intersection traffic operations under existing intersection geometrics and control (illustrated in **Figure 5**) and "Existing" traffic volumes (illustrated in **Figure 6**).

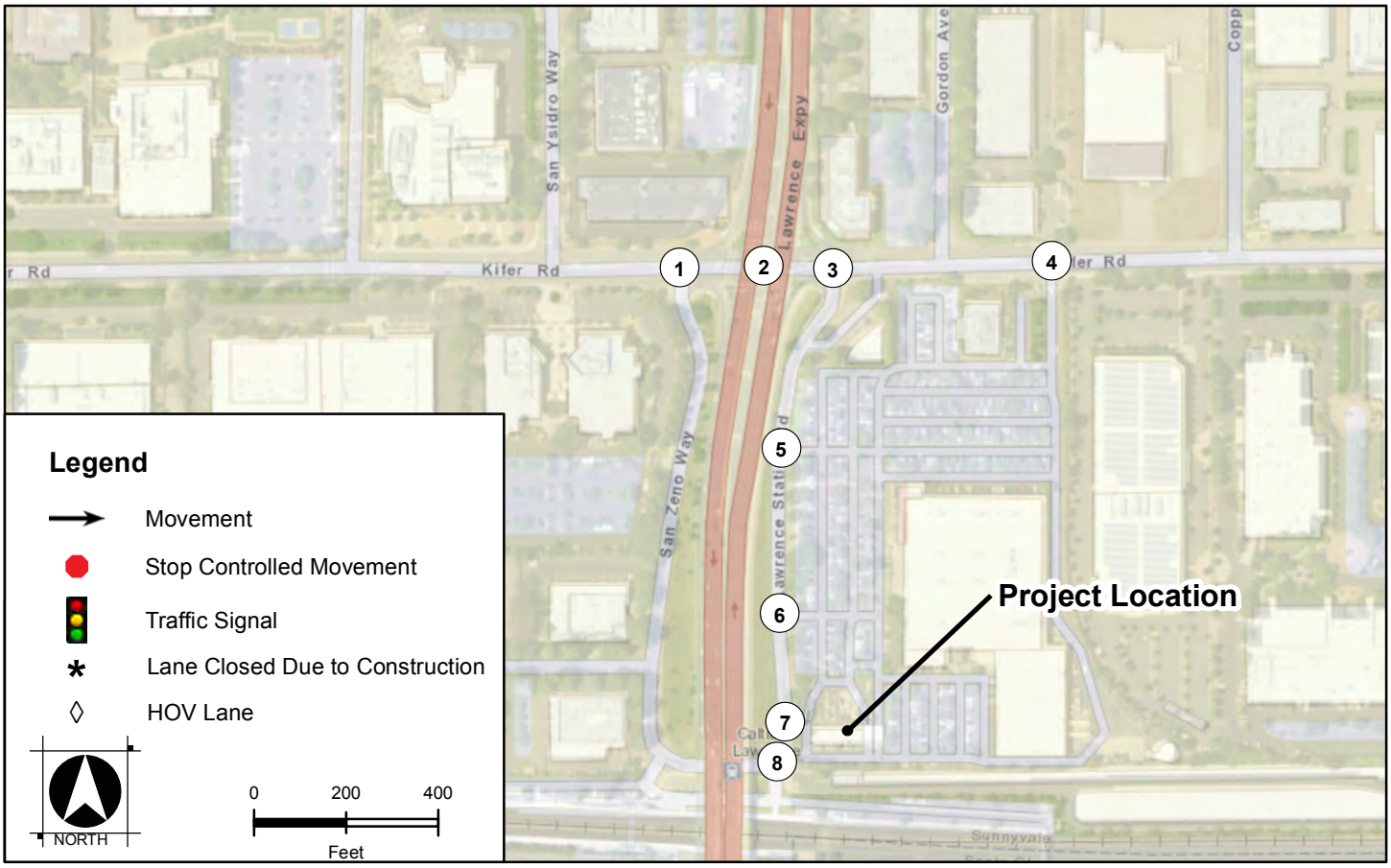
Table 3. "Existing" Conditions Intersection Traffic Operation

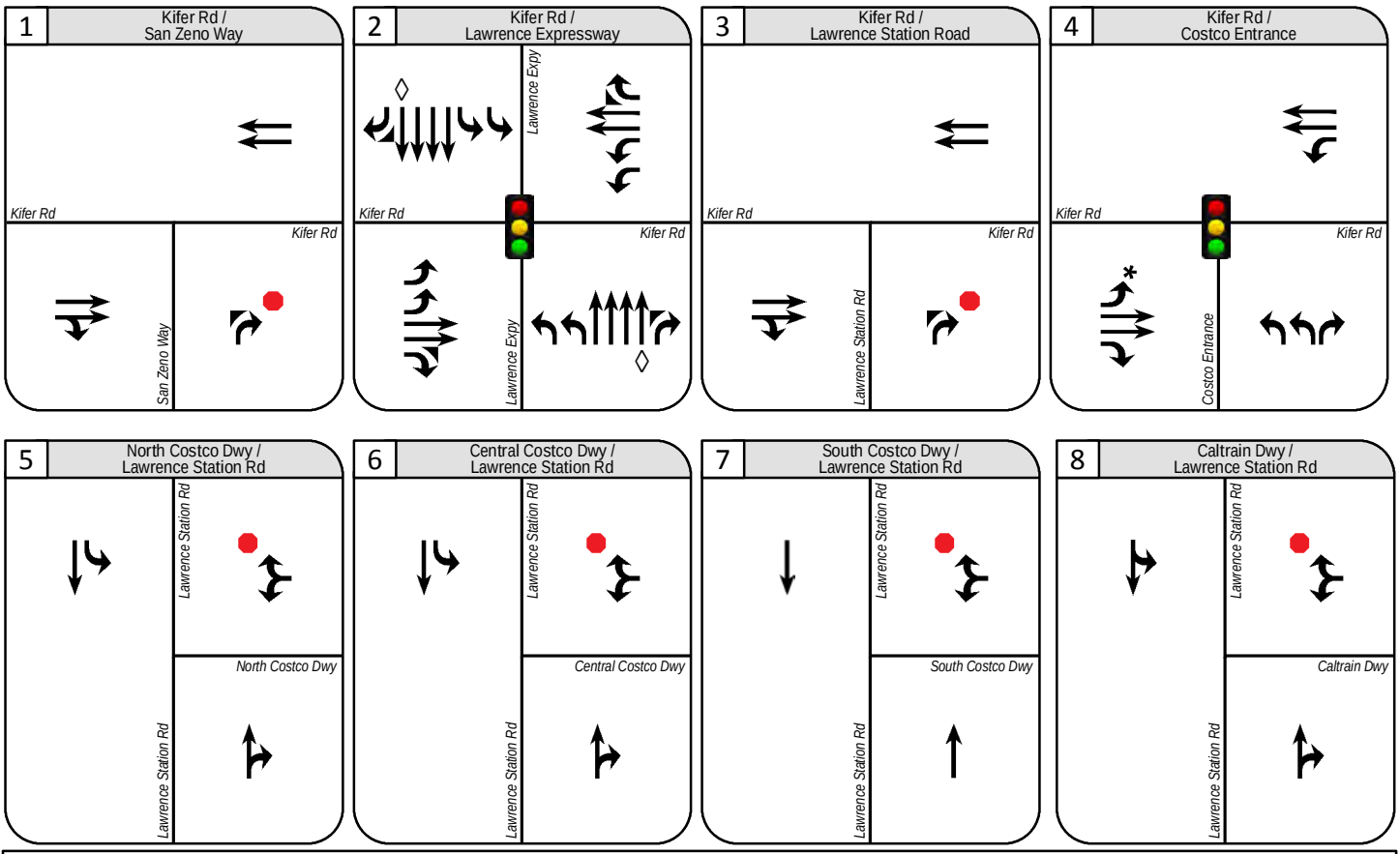
#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions		
					Delay (S/V)[1]	LOS	Wrnt Met?[2]
1	Kifer Road / San Zeno Way	TWSC	D	AM	10.0	B	-
				PM	**35.4**	**E**	-
2	Kifer Road / Lawrence Expressway[3]	Signal	E	AM	26.6	C	-
				PM	49.8	D	-
3	Kifer Road / Lawrence Station Road	TWSC	D	AM	11.4	B	-
				PM	13.5	B	-
4	Kifer Road / Costco Entrance	Signal	D	AM	10.3	B+	-
				PM	18.0	B	-
5	North Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.1	B	No
				PM	16.9	C	No
6	Central Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.6	B	No
				PM	13.0	B	No
7	South Costco Driveway / Lawrence Station Road	TWSC	D	AM	9.8	A	No
				PM	10.6	B	No
8	Caltrain Driveway / Lawrence Station Road	TWSC	D	AM	9.4	A	No
				PM	9.5	A	No

Notes: 1. S/V=Seconds/Vehicle. For TWSC (Two-Way-Stop-Control) intersections, "worst" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for Signal-Control intersections.
2. Wrnt Met? = CA-MUTCD based Peak-hour-Volume Warrant #3 (Urban Areas)
3. Regionally significant intersection(s)
***BOLD** indicates unacceptable level of service.*

As shown in **Table 3**, the Kifer Road / San Zeno Way intersection is currently operating at unacceptable LOS "E" under "Existing" PM peak hour conditions. All of the remaining study intersections are currently operating at acceptable level of service conditions (LOS "D" or better for City intersections and LOS "E" or better for regionally significant intersections) during the AM and PM peak hours. All delay and LOS results shown in **Table 3** were calculated using TRAFFIX or Synchro software**.** CA-MUTCD based peak hour signal warrant-3 (urban areas) is not projected to be met at unsignalized study intersections under "Existing" conditions. TRAFFIX and Synchro software intersection LOS outputs can be found in **Appendix A,** and CA-MUTCD signal warrant-3 worksheets can be found in **Appendix B.**

All recommended improvements are discussed in a subsequent section of this TOA report.





Existing Lane Geometric and Control
150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Figure 5

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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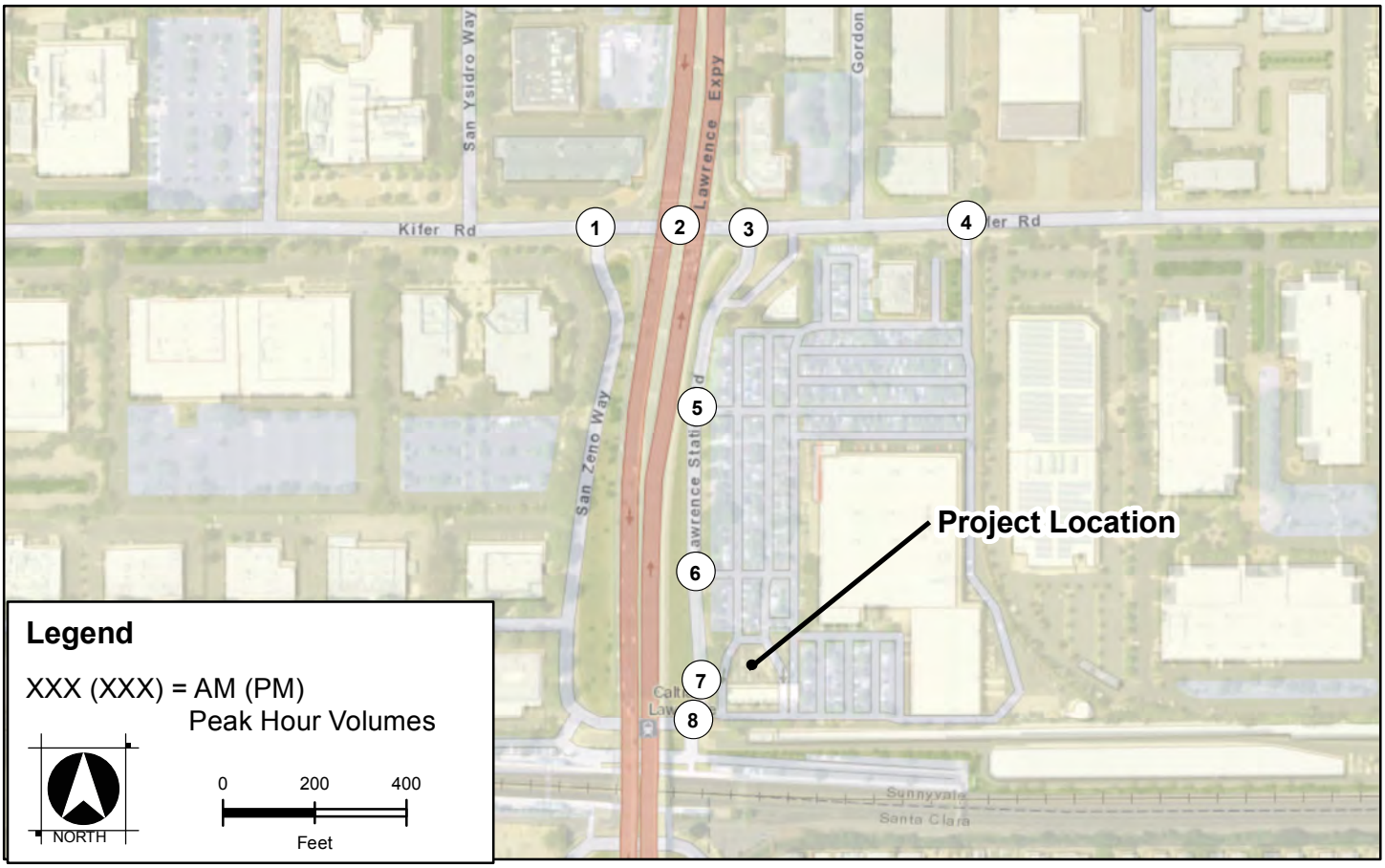
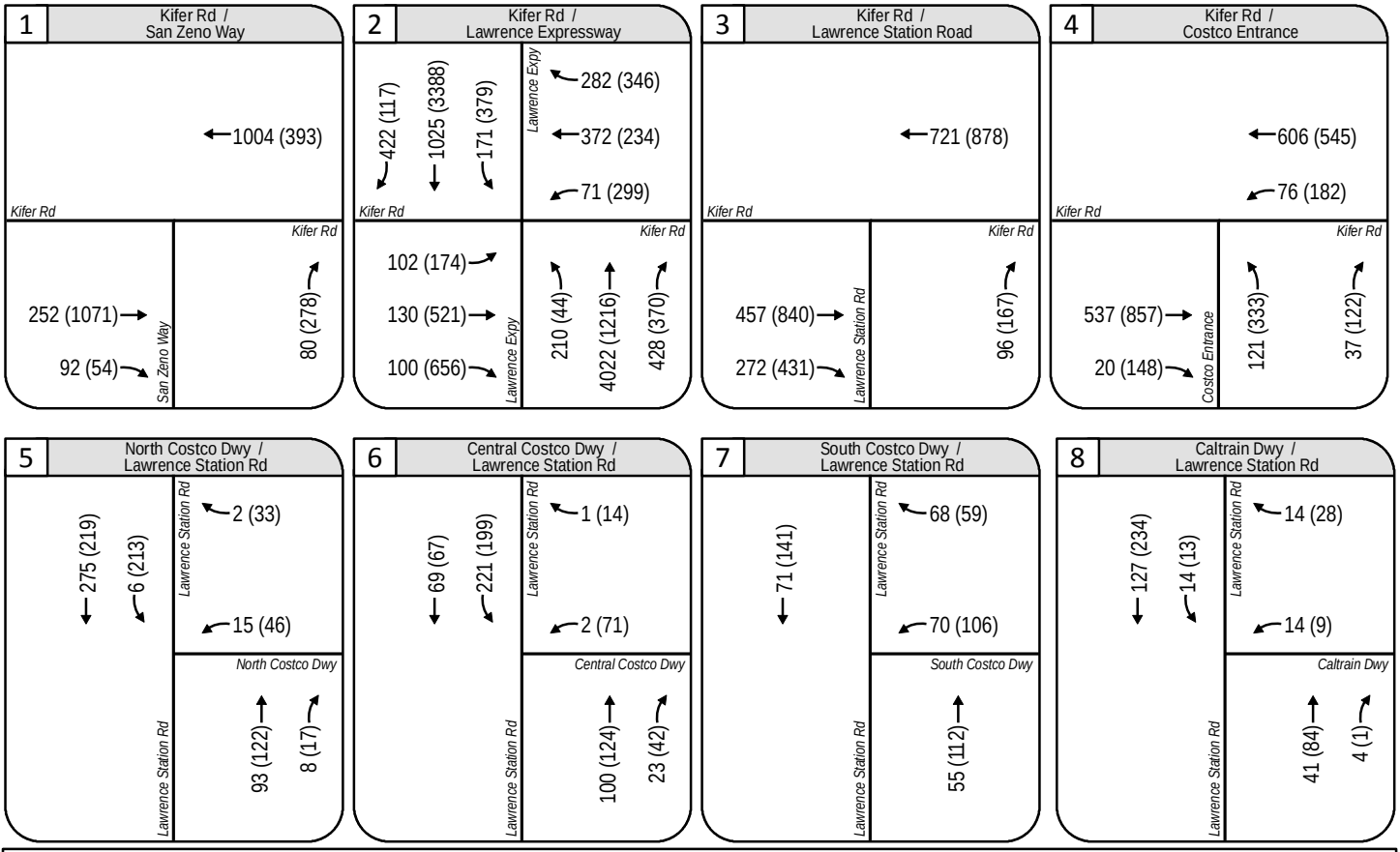




"Existing" Traffic Volumes
150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Figure 6

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

2.7 Field Observations

Wood Rodgers transportation engineers conducted peak hour field observations of the study intersections on Wednesday May 31, 2017. Observed conditions appeared generally consistent with calculated "Existing" conditions levels-of-service shown in **Table 3**. A summary of specific observations made for certain study intersections is provided below:

- Kifer Road / Lawrence Expressway (#2) – The westbound approach (Kifer Road) queues to/past the Kifer Road / Costco Driveway intersection (#4) during the peak hours. Lawrence Expressway traffic is heavy in the northbound direction during the morning and southbound direction during the afternoon.
- Kifer Road / Costco Entrance (#4) – The signal was configured for four legs; however the north leg currently does not exist. Construction appeared to be in progress north of Kifer Road.
- Lawrence Station Road / Central Costco Driveway (#6) – Queuing at the Costco Gas pumps did not appear to back up far enough to block the Central Costco Driveway during the AM or PM peak hours.
- Lawrence Station Road / South Costco Driveway (#7) – Exit only. Appeared to have enough space to hold two queued vehicles without blocking traffic from the gas pumps. There were signs nearby directing drivers how to access southbound Lawrence Expressway (via San Zeno Way) and northbound Lawrence Expressway (via the Costco Driveway to Kifer Road).

3. Existing Plus Project Conditions

This chapter provides a description of the proposed Project, a discussion of the trip generation and distribution/assignment methods used to come up with Project only volumes at study intersections, and an analysis of projected traffic operations and deficiencies due to the proposed Project.

3.1 Project Site

3.1.1 Project Site Description

The proposed Project would increase the number of Costco fueling positions by 10, from 20 to 30 total fueling positions, and expand the existing fuel canopy from 5,024-square-feet to 10,676-square-feet (proposed expansion of 5,652-square-feet) on the southwest corner of the Costco site. The expansion would eliminate nine (9) standard parking stalls on the site (721 existing stalls, 712 proposed stalls), and the number of handicap parking stalls would remain the same (28 existing and proposed stalls).

The proposed Project site would continue to access the adjacent roadway network via the three driveways on Lawrence Station Road and the Costco Entrance on Kifer Road. No new project access driveways are proposed.

3.2 Project Generated Trips

3.2.1 Trip Generation and Reductions

Institute of Transportation Engineers Trip Generation Manual, 9th Edition (2012) rates were determined to not accurately project number of trips generated by the specific land use associated with the proposed Project (fuel station expansion at an existing Costco site). As such, the number of trips generated by the Project were estimated based on data collected at the existing Costco fuel station along with Costco gasoline trip type characteristics provided in the Kittelson & Associates, Inc. memorandum *Costco Gasoline Fuel Station Transportation Characteristics* (dated May 23,

2013). The trip type characteristics data from the Kittelson & Associates memo was chosen as it was based on actual travel patterns of existing Costco fuel stations in California and assumed more conservative ratios of internal/diverted/primary trips than the *Institute of Transportation Engineers Trip Generation Manual*. Trip reduction goals outlined in the Lawrence Station Area Plan and VTA Transportation Impact Analysis Guidelines are not used in this TOA as the Project will generally only generate vehicular traffic.

Per the Kittelson & Associates memorandum, a breakdown of typical Costco fuel station trip types are as follows:

- 34% internal trips (PM peak hour only)
- 49% diverted trips
- 51% (AM peak hour)/17% (PM peak hour) primary trips

Internal trips to the Costco fuel station are those made by Costco members who shop at Costco and visit the gas pumps in a single trip. Internal trips are not considered during the AM peak hour as the Costco store is not open at that time. Diverted trips represent trips made by members who are already on the surrounding roadway network but stop at the fuel station on the way to their final destination. For this TOA it was assumed all diverted trips would come from Lawrence Expressway. Primary trips are made by those who travel to the Project site specifically to use the fuel station and are considered new trips on the overall surrounding transportation system. The AM peak hour was assumed to have a higher percentage of primary trips than the PM peak hour since the Costco store is not open during the AM peak hour.

Using data collected on May 9, 2017, the total number of vehicles using the existing fuel station during each peak hour was divided by the existing number of fueling positions (20) to obtain a trip generation rate per unit fueling position, shown in **Table 4**. The above trip type percentages were then applied to the total number of trips generated by the additional 10 fueling positions to obtain AM and PM peak hour diverted and primary Project trips, shown in **Table 5**.

Table 4. Project Trip Generation Rates

Land Use Category	Source	Rate Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
			Total	In%	Out%	Total	In%	Out%
Costco Gasoline Fuel Station	May 2017 Counts	Fueling Positions	25.80	50%	50%	31.20	50%	50%

Notes: [1]Rates based on traffic counts conducted at existing gas station site.

Table 5. Project Trip Generation Volumes

Land Use	Units	Quantity	Weekday AM Peak Hour Trips[1]			Weekday PM Peak Hour Trips		
			Total	In	Out	Total	In	Out
Costco Gasoline Fuel Station	Fueling Positions	10	258	129	129	312	156	156
Internal Trips (PM Only)	34%		0	0	0	-106	-53	-53
Diverted Trips	**49%**		**126**	**63**	**63**	**154**	**77**	**77**
Primary Trips	**51% (AM), 17% (PM)**		**132**	**66**	**66**	**52**	**26**	**26**

Notes: [1] Internal and pass-by/diverted trip reductions based on data from Kittleson & Associates Costco Gasoline Fuel station Characteristics Memo (May 23, 2013).

As illustrated in **Table 5**, the proposed Project is anticipated to generate a total of 126 AM peak hour diverted trips (63 inbound, 63 outbound), 132 AM peak hour primary trips (66 inbound, 66 outbound), 154 PM peak hour diverted trips (77 inbound, 77 outbound), and 52 PM peak hour primary trips (26 inbound, 26 outbound) under typical "annual average" traffic demand conditions.

3.2.2 Project Trip Distribution and Assignment

The Project trip distribution was determined based on existing traffic volumes and travel patterns. Project trips were assigned to the study area network based on the Project trip distribution. **Figure 7** illustrates the estimated Primary Project Trips directional trip distribution and assignment patterns projected to be generally applicable for the Project under existing and near-term conditions on an annualized average usage basis. **Figure 7** also illustrates the estimated AM and PM peak hour Primary Project Trips traffic volumes projected to be applicable under existing and near-term conditions.

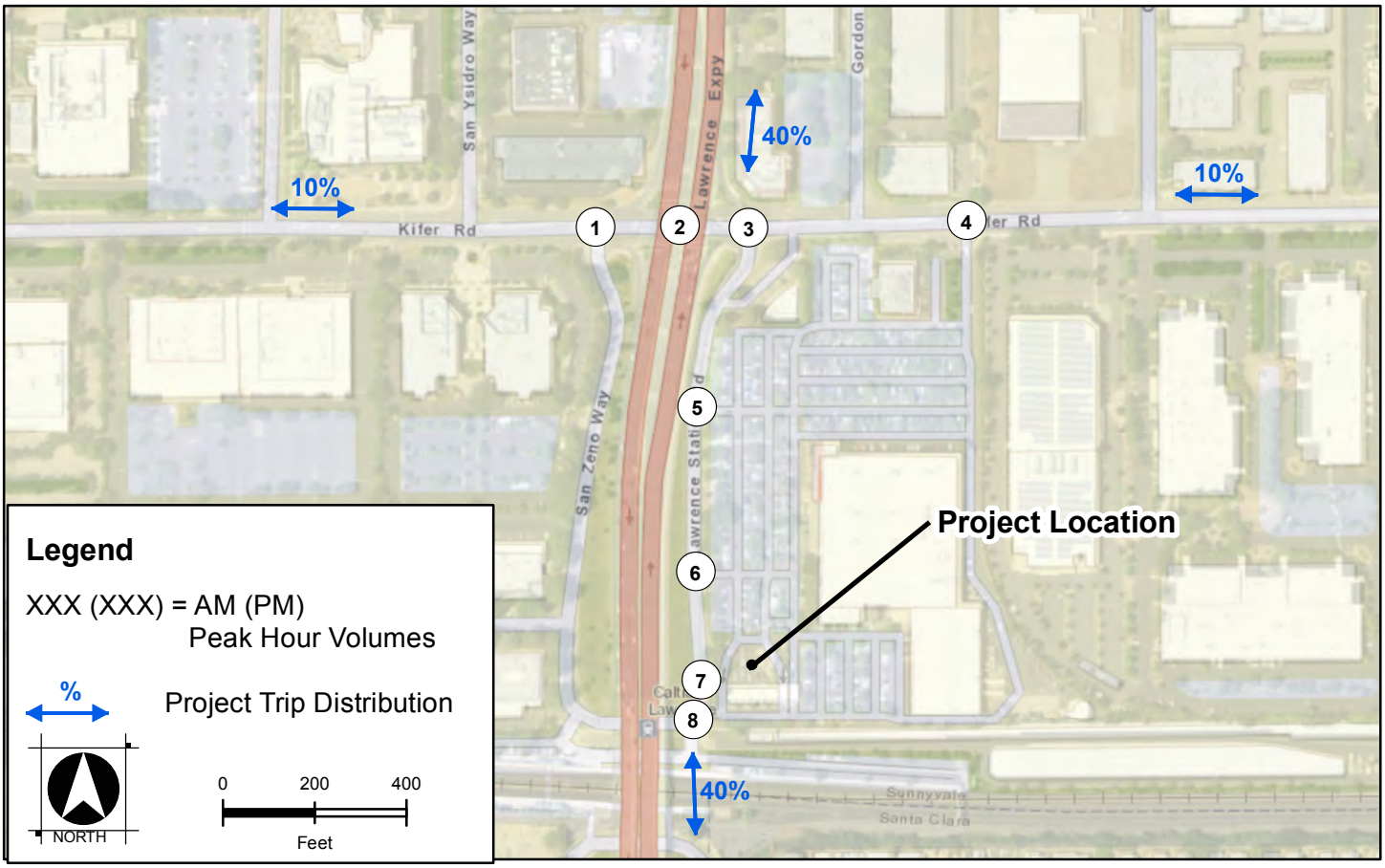
Figure 8 illustrates Diverted Project Trips traffic volumes and trip distribution. Diverted Project Trips were assumed to originate exclusively from Lawrence Expressway north and south of Kifer road and "divert" from Lawrence Expressway for the sole purpose of visiting the expanded Costco fuel station. Primary Project Trips and Diverted Project Trips traffic volumes were added on top of "Existing" conditions traffic volumes at study intersections to create "Existing plus Project" conditions traffic volumes. **Figure 9** illustrates the estimated AM and PM peak hour "Existing plus Project" conditions traffic volumes at study intersections.

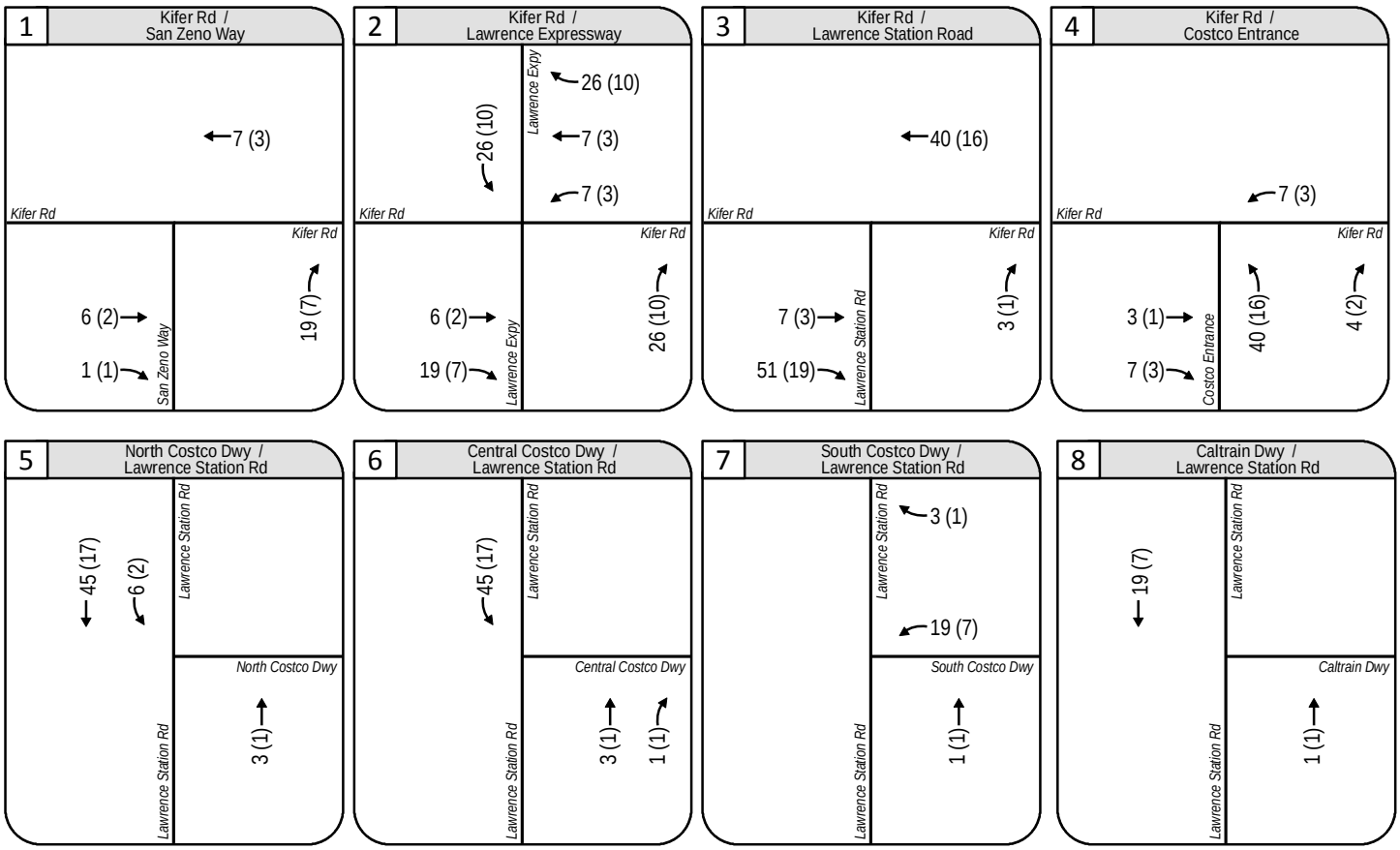
3.3 "Existing Plus Project" Intersection Operations

"Existing plus Project" intersection operations were quantified under "Existing plus Project" traffic volumes (shown in **Figure 9**) and existing intersection lane geometrics and control (shown in **Figure 5**). **Table 6** illustrates the resulting "Existing plus Project" intersection LOS operations. **Table 6** also contains "Existing" conditions intersection delays and LOS for comparison purposes, as well as the projected change in delay of critical movements and critical V/C ratios caused by the addition of Project generated trips. The projected change in delay of critical movements and critical V/C ratios were reported for use in identifying operational deficiencies.

As shown in **Table 6**, the Kifer Road / San Zeno Way intersection is projected to operate at unacceptable LOS "E" under "Existing plus Project" PM peak hour conditions. All of the remaining study intersections are projected to operate at acceptable "Existing plus Project" LOS conditions (LOS "D" or better for City intersections and LOS "E" or better for regionally significant and CMP intersections) during the AM and PM peak hours. All delay and LOS results shown were calculated using TRAFFIX or Synchro software**.** CA-MUTCD based peak hour signal warrant-3 (urban areas) is not projected to be met at unsignalized study intersections under "Existing plus Project" conditions. TRAFFFIX and Synchro software intersection LOS outputs can be found in **Appendix A,** and CA-MUTCD signal warrant-3 worksheets can be found in **Appendix B.**

All recommended improvements are discussed in a subsequent section of this TOA report.





"Project Only - Primary" Traffic Volumes and Trip Distribution

150 Lawrence Station Road TOA

Sunnyvale, CA

September 2017

Figure 7

WOOD RODGERS

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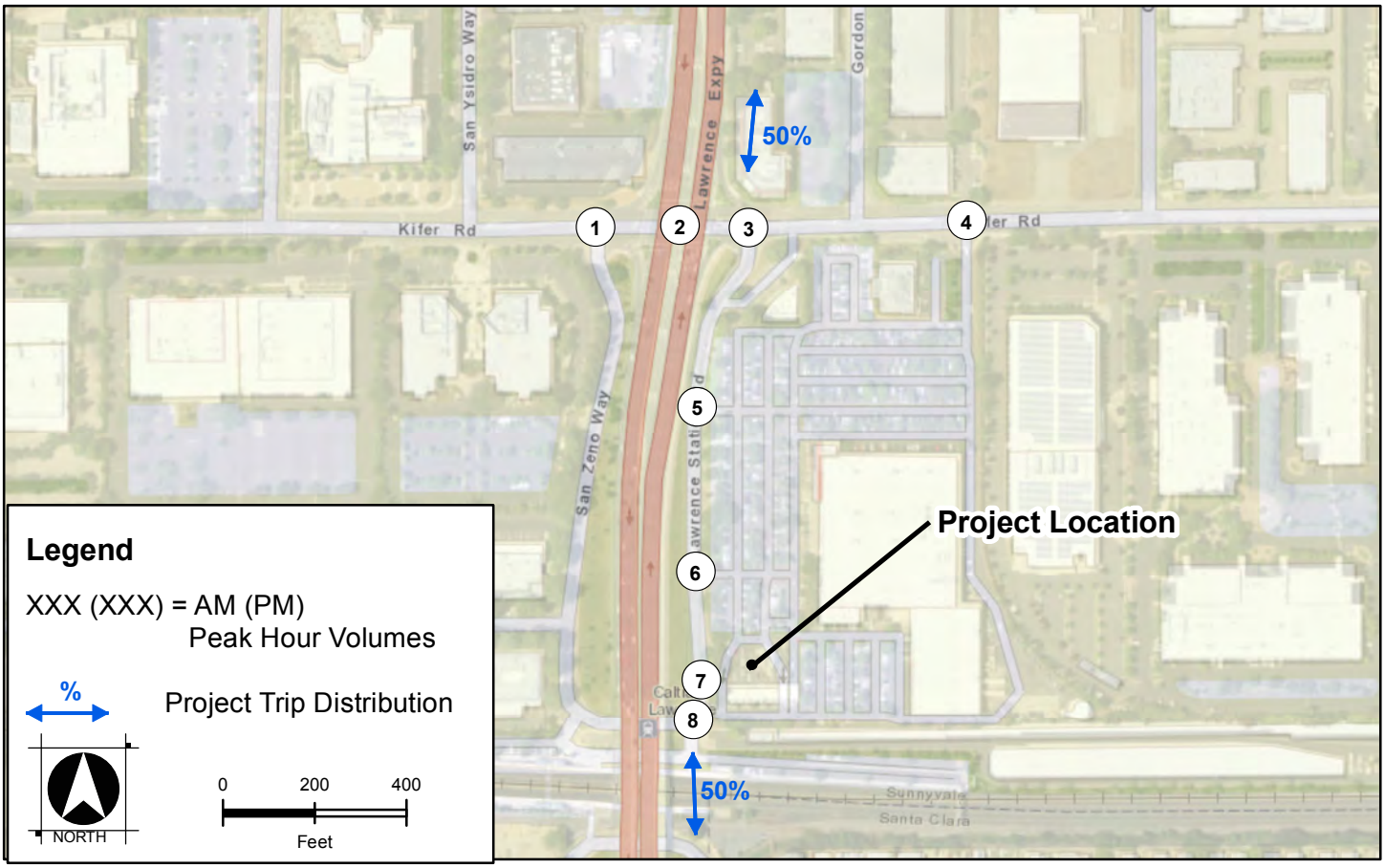

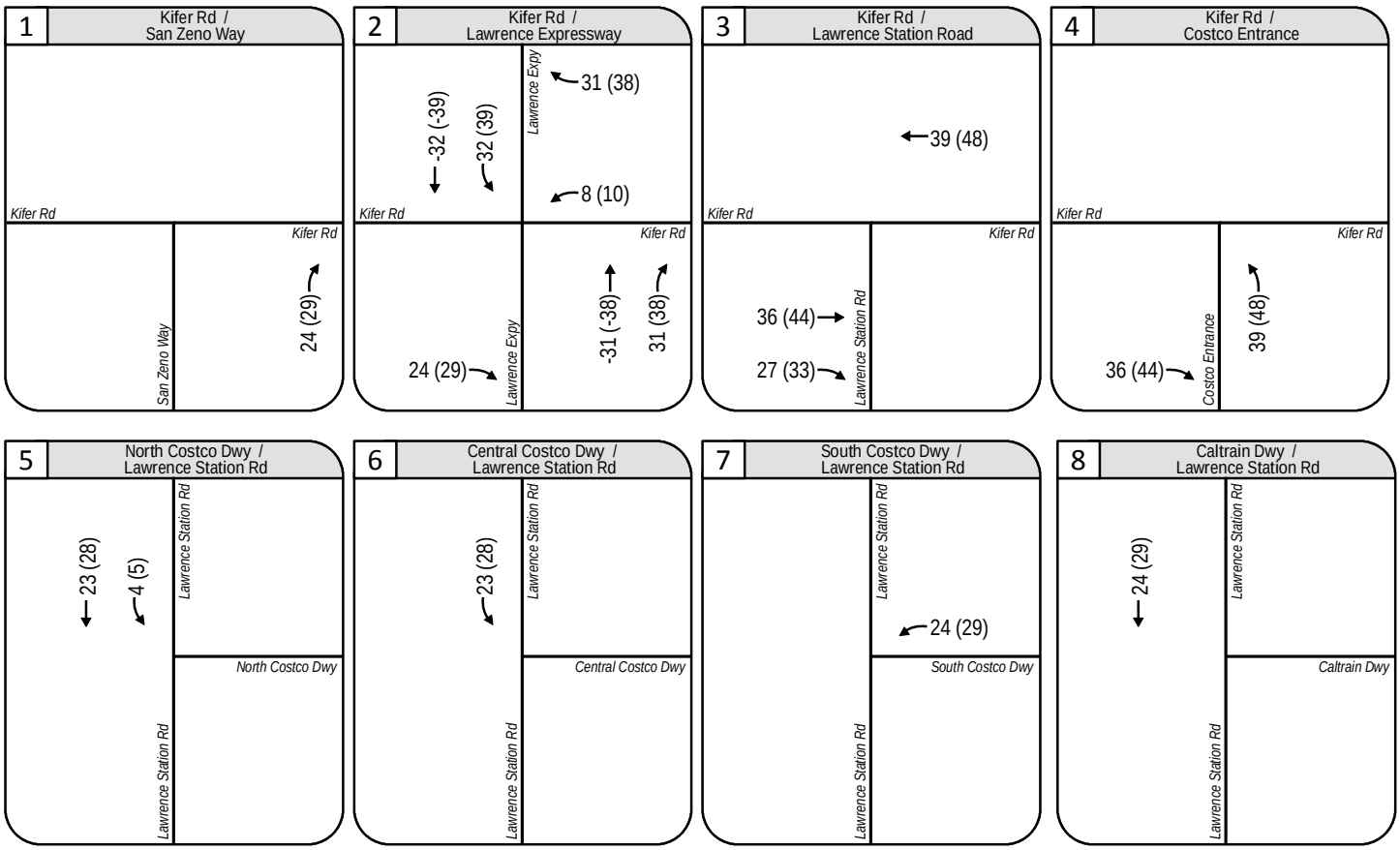

"Project Only - Diverted" Traffic Volumes and Trip Distribution

150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Figure 8

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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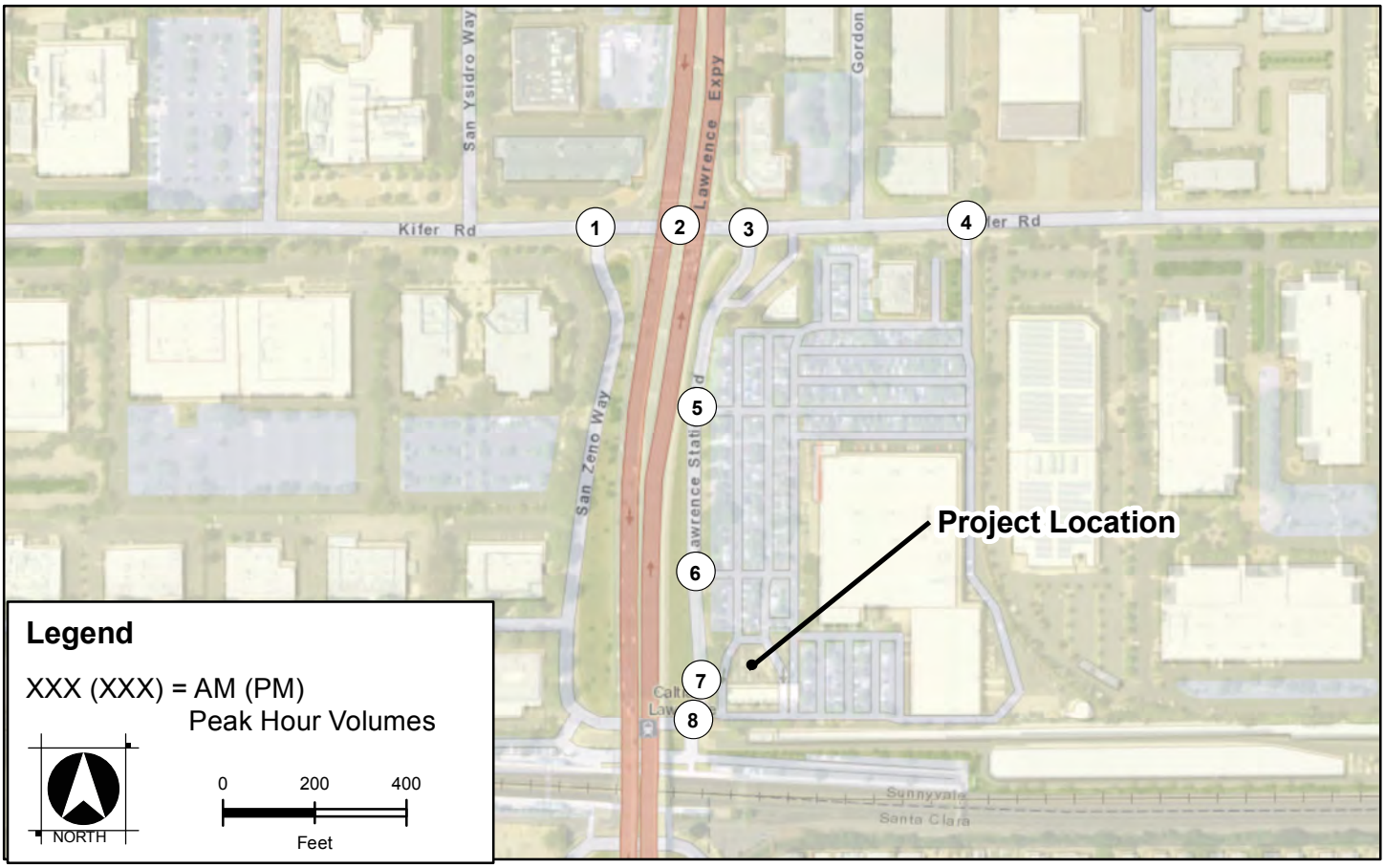

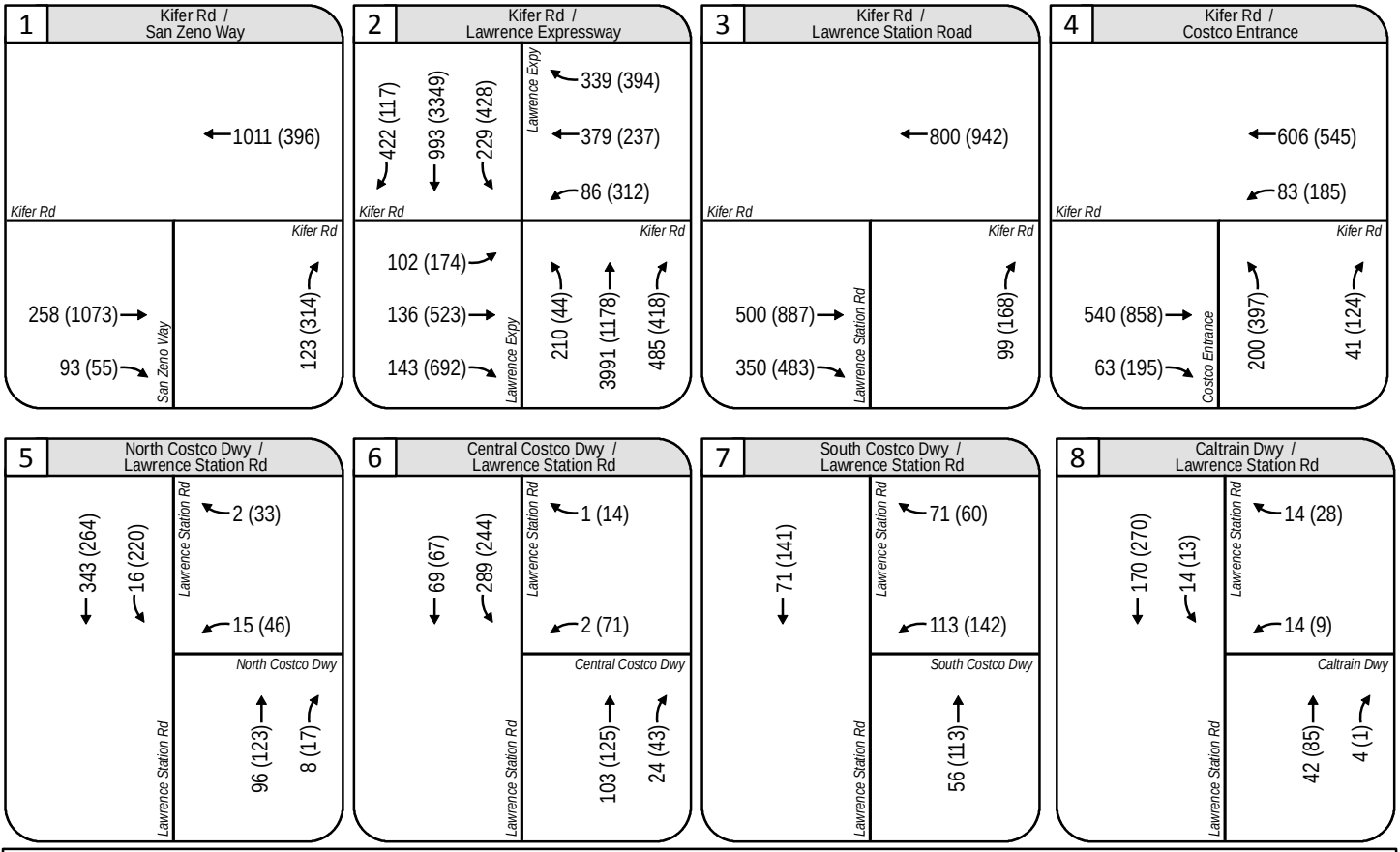

"Existing plus Project" Traffic Volumes
150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Figure 9

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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Table 6. "Existing plus Project" Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions			Existing plus Project Conditions				
					Delay (S/V)[1]	LOS	Wrnt Met?[2]	Delay (S/V)[1]	LOS	Wrnt Met?[2]	Δ in Critical V/C	Δ in Critical Delay
1	Kifer Road / San Zeno Way	TWSC	D	AM	10.0	B	-	10.4	B	-	0.00	0.3
				PM	**35.4**	**E**	-	**46.5**	**E**	-	0.02	2.4
2	Kifer Road / Lawrence Expressway[3]	Signal	E	AM	26.6	C	-	32.9	C-	-	0.05	9.8
				PM	49.8	D	-	55.3	E+	-	0.02	9.0
3	Kifer Road / Lawrence Station Road	TWSC	D	AM	11.4	B	-	12.2	B	-	0.04	0.0
				PM	13.5	B	-	15.8	C	-	0.03	0.1
4	Kifer Road / Costco Entrance	Signal	D	AM	10.3	B+	-	12.3	B	-	0.01	0.7
				PM	18.0	B	-	18.9	B-	-	0.02	0.9
5	North Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.1	B	No	11.9	B	No	0.03	0.1
				PM	16.9	C	No	18.2	C	No	0.02	-0.1
6	Central Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.6	B	No	12.8	B	No	0.04	0.6
				PM	13.0	B	No	14.2	B	No	0.02	0.5
7	South Costco Driveway / Lawrence Station Road	TWSC	D	AM	9.8	A	No	10.2	B	No	0.04	1.0
				PM	10.6	B	No	11.0	B	No	0.03	0.7
8	Caltrain Driveway / Lawrence Station Road	TWSC	D	AM	9.4	A	No	9.6	A	No	0.00	-0.3
				PM	9.5	A	No	9.5	A	No	0.00	-0.1

Notes: 1. S/V=Seconds/Vehicle. For TWSC (Two-Way-Stop-Control) intersections, "worst " movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for Signal-Control intersections.
2. Wrnt Met? = CA-MUTCD based Peak-hour-Volume Warrant #3 (Urban Areas)
3. Regionally significant intersection(s)
***BOLD** indicates unacceptable level of service.*

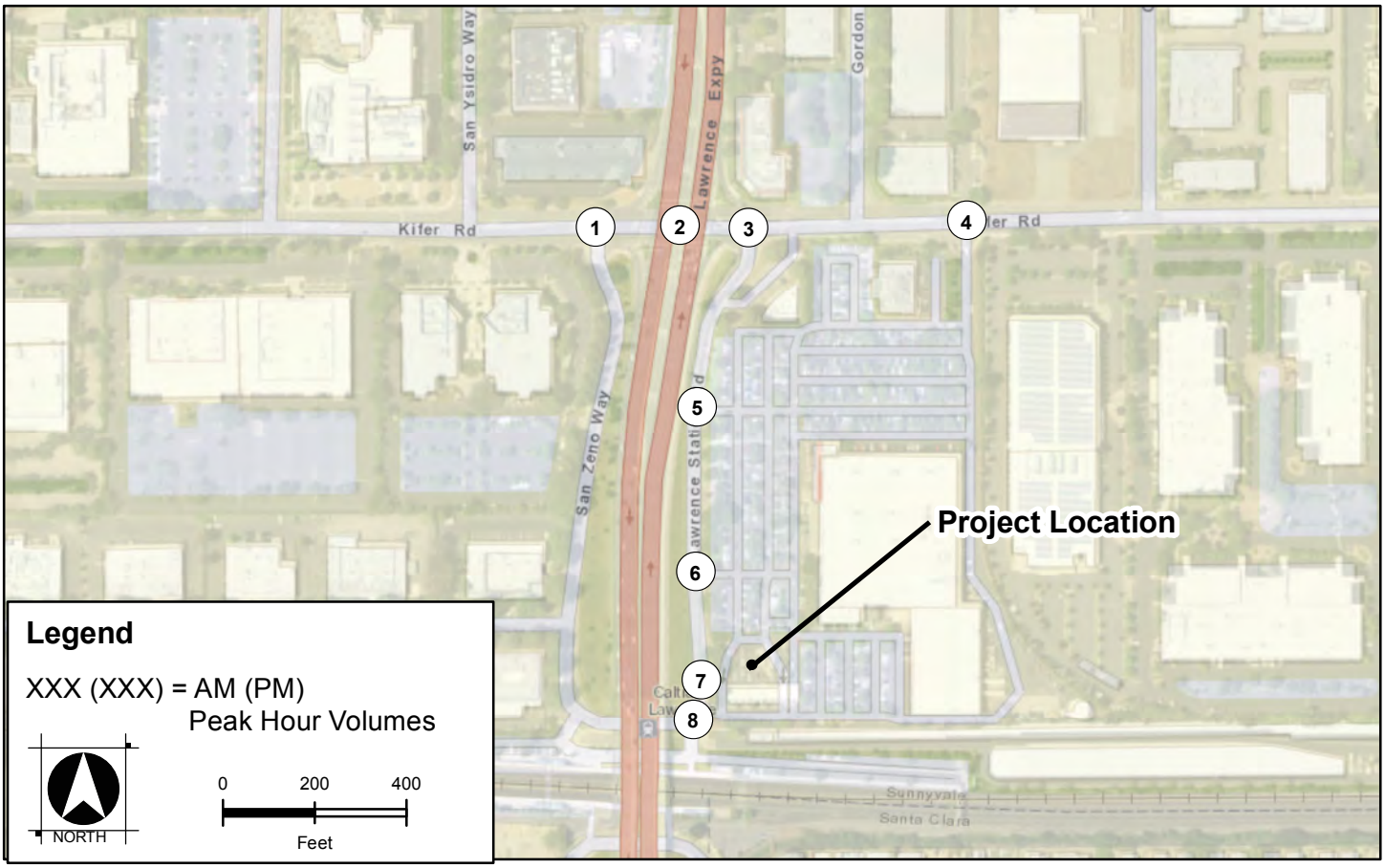
4. "BACKGROUND" CONDITIONS

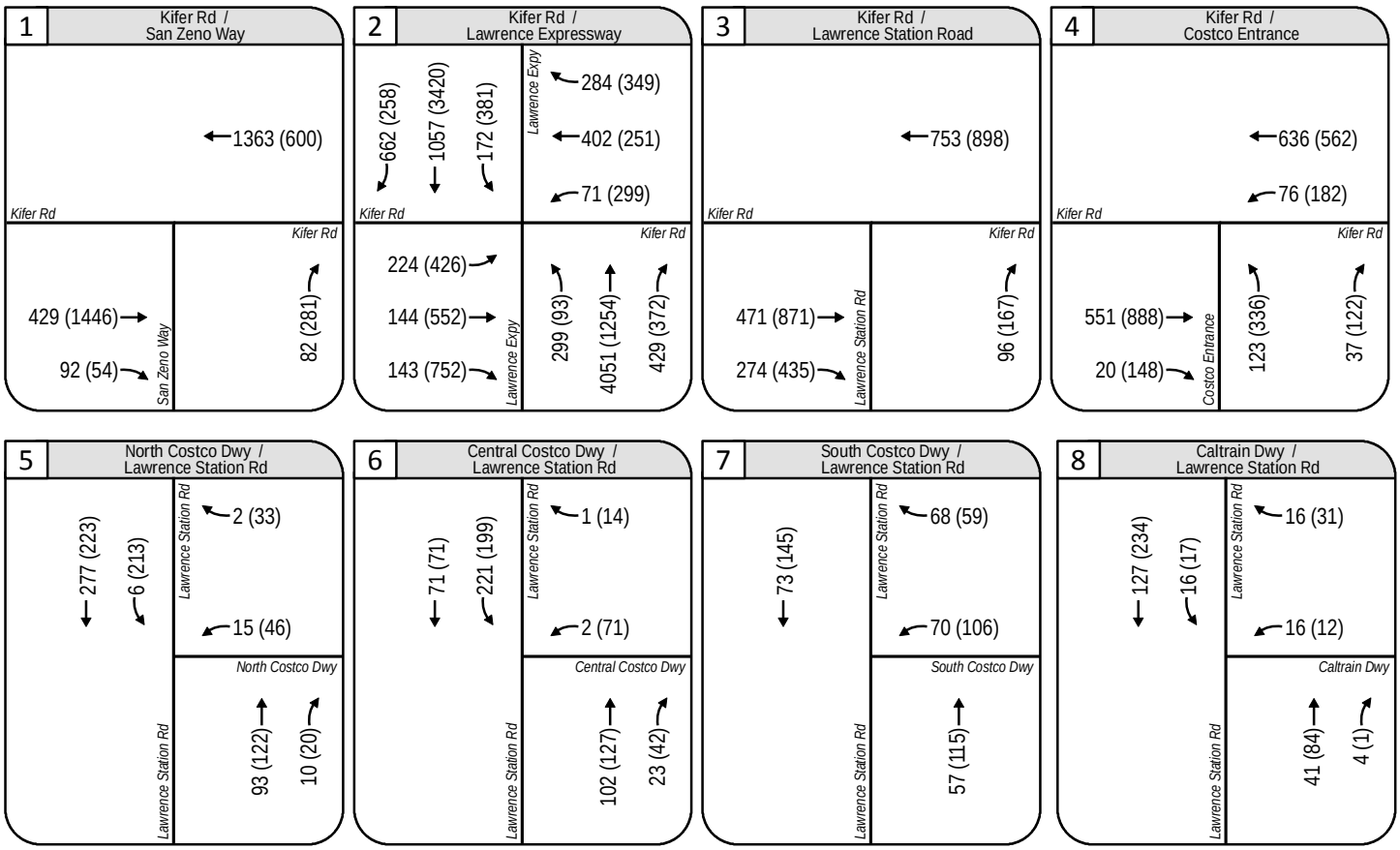
This chapter presents the study area intersection traffic operations results under "Background" conditions without Project generated trips. The City and the VTA define "Background" conditions as existing traffic volumes plus traffic generated by "approved but not yet constructed" developments within the vicinity of the Project site. "Background" conditions are a near-term future condition that could reasonably represent study area conditions at the time of Project completion.

4.1 "BACKGROUND" (NO PROJECT) CONDITIONS VOLUMES

"Background" conditions traffic volumes were developed by adding trips generated by nearby "approved but not constructed" developments to the "Existing" conditions traffic volumes. In order to determine which nearby developments to include in "Background" conditions, a current list of approved and pending projects was obtained from City of Sunnyvale staff. Per City of Sunnyvale policy, only projects that were designated as "approved" on the list of approved and pending projects, that consisted of land uses larger than 20 residential units or 10,000 square feet of office/commercial space, and which were located within a one mile radius of the Project site were selected to be a part of "Background" conditions volumes.

The net new trips from these "approved" developments were estimated using typical *ITE Trip Generation Manual 9th Edition* rates and City of Sunnyvale and VTA trip reduction guidelines/ targets. These "approved" development trips were then assigned to the study area network using existing traffic volume patterns and available planning documents and added to "Existing" traffic volumes to obtain "Background" traffic volumes. A full list of "approved but not constructed" developments assumed under "Background" conditions is included in **Appendix C**. "Approved" development trip generation worksheets are included in **Appendix D**, "approved" development trip distributions are included in **Appendix E**, and total "approved" development volumes are included in **Appendix F**. Based on discussion with the City, there are no new roadway improvement projects assumed to be completed within the Project study area by "Background" conditions. Therefore, "Background" lane geometrics are assumed to be the same as "Existing" lane geometrics. "Background" condition study intersection turning movement volumes are presented in **Figure 10**.





"Background" Traffic Volumes
150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Figure 10

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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4.2 "BACKGROUND" (NO PROJECT) INTERSECTION OPERATIONS

"Background" intersection operations were quantified under "Background" traffic volumes (shown in **Figure 10**) and existing intersection lane geometrics and control (shown in **Figure 5**). **Table 7** illustrates the resulting "Background" intersection LOS operations.

Table 7. "Background" Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions		
					Delay (S/V)[1]	LOS	Wrnt Met?[2]
1	Kifer Road / San Zeno Way	TWSC	D	AM	10.9	B	-
				PM	**100.4**	**F**	-
2	Kifer Road / Lawrence Expressway[3]	Signal	E	AM	29.4	C	-
				PM	64.9	E	-
3	Kifer Road / Lawrence Station Road	TWSC	D	AM	11.4	B	-
				PM	14.5	B	-
4	Kifer Road / Costco Entrance	Signal	D	AM	10.1	B+	-
				PM	17.8	B	-
5	North Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.1	B	No
				PM	17.1	C	No
6	Central Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.6	B	No
				PM	13.0	B	No
7	South Costco Driveway / Lawrence Station Road	TWSC	D	AM	9.8	A	No
				PM	10.6	B	No
8	Caltrain Driveway / Lawrence Station Road	TWSC	D	AM	9.4	A	No
				PM	9.6	A	No

Notes: 1. S/V=Seconds/Vehicle. For TWSC (Two-Way-Stop-Control) intersections, "worst " movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for Signal-Control intersections.
2. Wrnt Met? = CA-MUTCD based Peak-hour-Volume Warrant #3 (Urban Areas)
3. Regionally significant intersection(s)
***BOLD** indicates unacceptable level of service.*

As shown in **Table 7**, the unsignalized Kifer Road / San Zeno Way intersection is projected to operate at an unacceptable LOS "F" under "Background" PM peak hour conditions. All of the remaining study intersections are projected to operate at acceptable "Background" LOS conditions (LOS "D" or better for City intersections and LOS "E" or better for regionally significant and CMP intersections) during the AM and PM peak hours. All delay and LOS results shown in **Table 7** were calculated using TRAFFIX or Synchro software**.** CA-MUTCD based peak hour signal warrant-3 (urban areas) is not projected to be met at unsignalized study intersections under "Background" conditions. TRAFFFIX and Synchro software intersection LOS outputs can be found in **Appendix A**, and CA-MUTCD signal warrant-3 worksheets can be found in **Appendix B.**

All recommended improvements are discussed in a subsequent section of this TOA report.

5. "BACKGROUND PLUS PROJECT" CONDITIONS

This chapter presents the study area intersection traffic operations results under "Background plus Project" conditions.

5.1 "BACKGROUND PLUS PROJECT" CONDITIONS VOLUMES

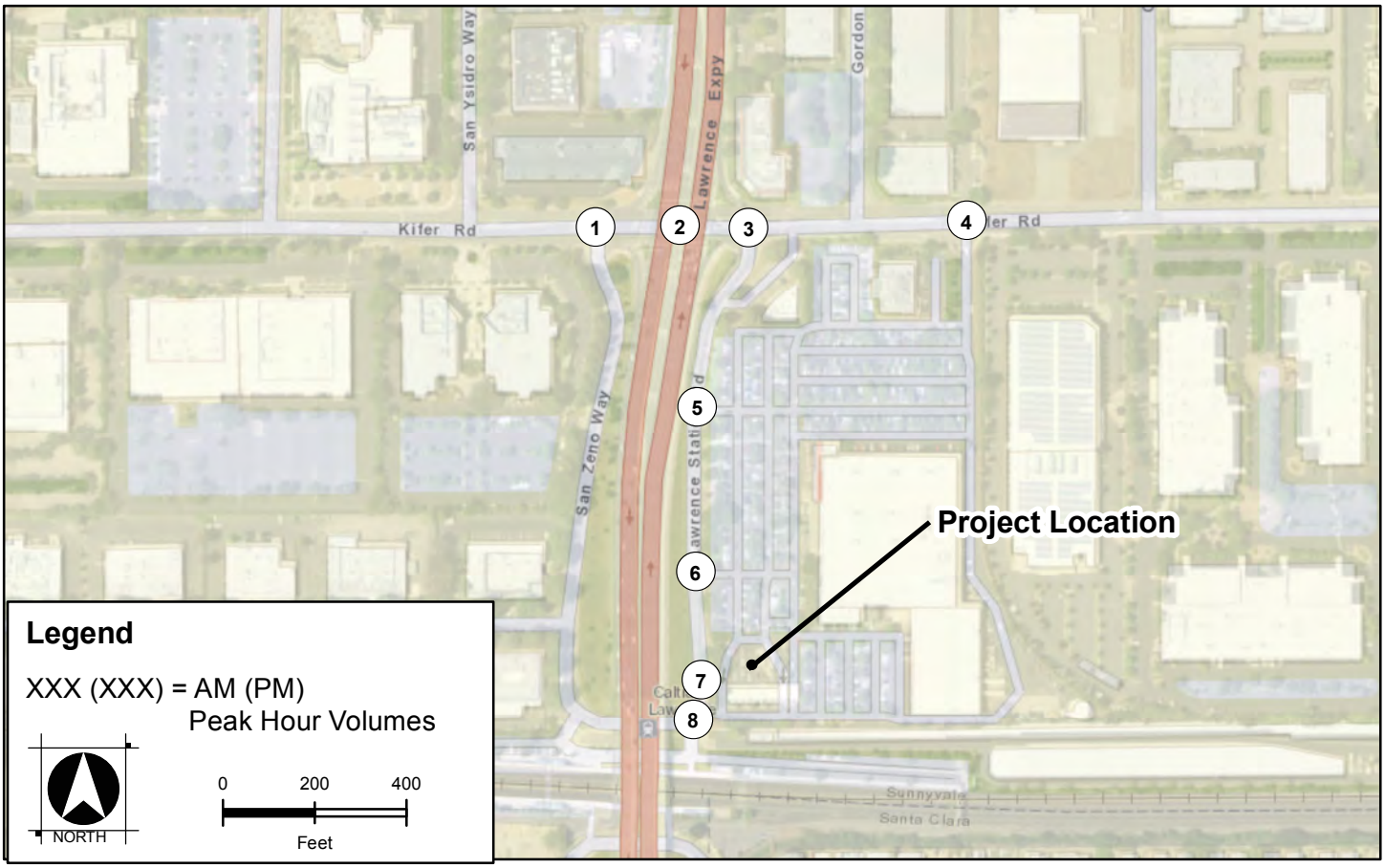
"Project Only - Primary" and "Project Only - Diverted" traffic volumes were added on top of "Background" conditions traffic volumes at study intersections to generate "Background plus Project" conditions traffic volumes. **Figure 11** illustrates the estimated AM and PM peak hour "Background plus Project" conditions traffic volumes at study intersections.

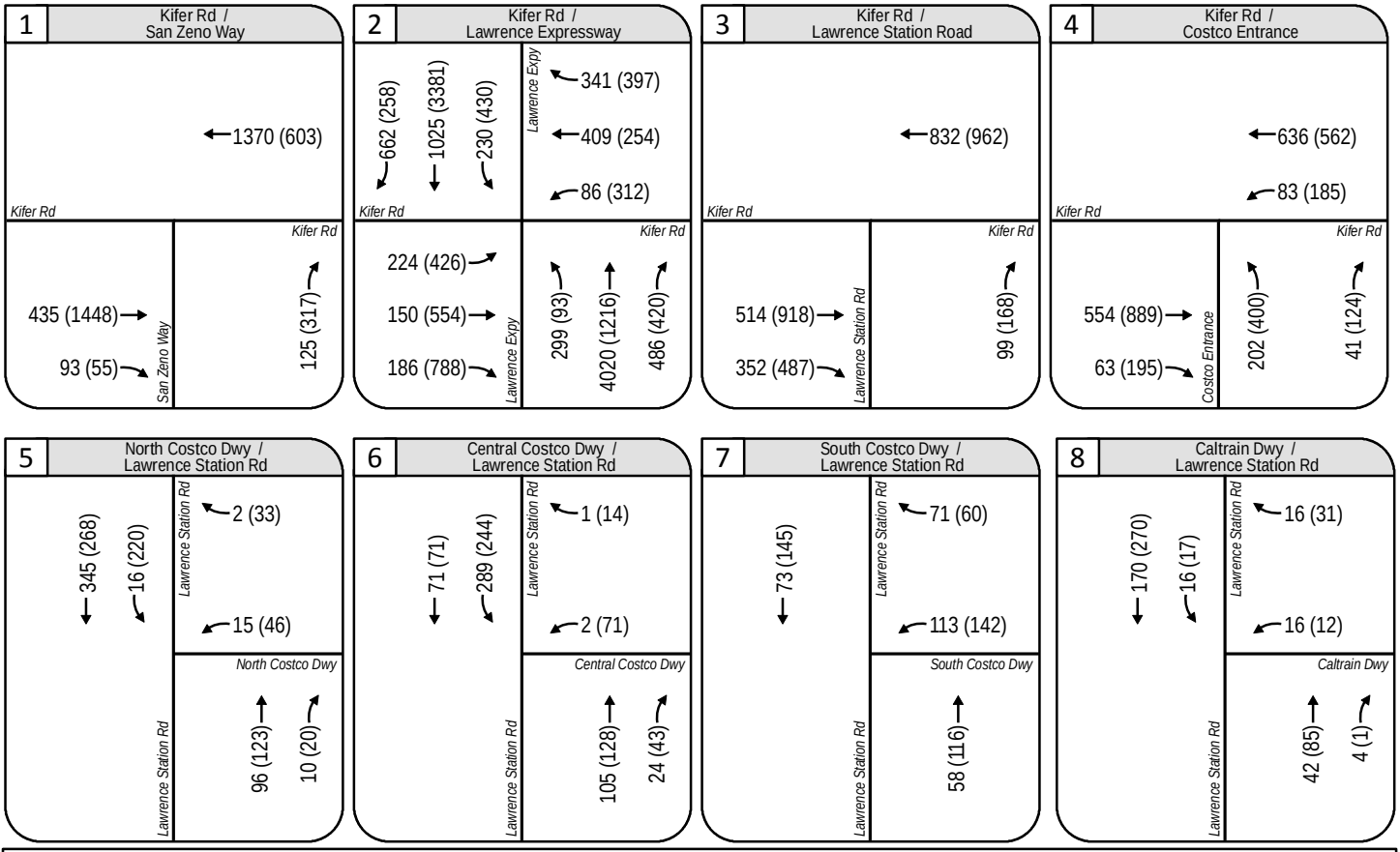
5.2 "BACKGROUND PLUS PROJECT" INTERSECTION OPERATIONS

"Background plus Project" intersection operations were quantified under "Background plus Project" traffic volumes (shown in **Figure 11**) and existing intersection lane geometrics and control (shown in **Figure 5**). **Table 8** illustrates the resulting "Background plus Project" intersection LOS operations. **Table 8** also contains "Background" conditions intersection delays and LOS for comparison purposes, as well as the projected change in delay of critical movements and critical V/C ratios caused by the addition of Project generated trips. The projected change in delay of critical movements and critical V/C ratios were reported for use in identifying operational deficiencies.

As shown in **Table 8**, the unsignalized Kifer Road / San Zeno Way intersection is projected to operate at an unacceptable LOS "F" under "Background plus Project" PM peak hour conditions. All of the remaining study intersections are projected to operate at acceptable "Background plus Project" LOS conditions (LOS "D" or better for City intersections and LOS "E" or better for regionally significant and CMP intersections) during the AM and PM peak hours. All delay and LOS results shown in **Table 8** were calculated using TRAFFIX or Synchro software**.** CA-MUTCD based peak hour signal warrant-3 (urban areas) is not projected to be met at unsignalized study intersections under "Background plus Project" conditions. TRAFFFIX and Synchro software intersection LOS outputs can be found in **Appendix A**, and CA-MUTCD signal warrant-3 worksheets can be found in **Appendix B.**

All recommended improvements are discussed in a subsequent section of this TOA report.





"Background plus Project" Traffic Volumes
150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Figure 11

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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Table 8. "Background plus Project" Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions			Background plus Project Conditions				
					Delay (S/V)[1]	LOS	Wrnt Met?[2]	Delay (S/V)[1]	LOS	Wrnt Met?[2]	Δ in Critical V/C	Δ in Critical Delay
1	Kifer Road / San Zeno Way	TWSC	D	AM	10.9	B	-	11.4	B	-	0.00	0.2
				PM	**100.4**	**F**	-	**144.2**	**F**	-	0.02	7.1
2	Kifer Road / Lawrence Expressway[3]	Signal	E	AM	29.4	C	-	35.9	D+	-	0.05	10.5
				PM	64.9	E	-	71.1	E	-	0.02	10.0
3	Kifer Road / Lawrence Station Road	TWSC	D	AM	11.4	B	-	12.2	B	-	0.03	0.0
				PM	14.5	B	-	15.9	C	-	0.03	0.1
4	Kifer Road / Costco Entrance	Signal	D	AM	10.1	B+	-	12.1	B	-	0.01	0.6
				PM	17.8	B	-	18.8	B-	-	0.02	1.1
5	North Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.1	B	No	11.9	B	No	0.03	0.0
				PM	17.1	C	No	18.4	C	No	0.02	-0.1
6	Central Costco Driveway / Lawrence Station Road	TWSC	D	AM	11.6	B	No	12.8	B	No	0.04	0.6
				PM	13.0	B	No	14.3	B	No	0.02	0.4
7	South Costco Driveway / Lawrence Station Road	TWSC	D	AM	9.8	A	No	10.3	B	No	0.05	0.9
				PM	10.6	B	No	11.1	B	No	0.03	0.7
8	Caltrian Driveway / Lawrence Station Road	TWSC	D	AM	9.4	A	No	9.6	B	No	0.00	-0.2
				PM	9.6	A	No	9.7	B	No	0.00	-0.1

Notes: 1. S/V=Seconds/Vehicle. For TWSC (Two-Way-Stop-Control) intersections, "worst " movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for Signal-Control intersections.
2. Wrnt Met? = CA-MUTCD based Peak-hour-Volume Warrant #3 (Urban Areas)
3. Regionally significant intersection(s)
***BOLD** indicates unacceptable level of service.*

6. SITE ACCESS AND CIRCULATION

This chapter reviews the proposed Project site plan, including discussion of site access driveways, internal circulation, and internal fuel station queuing.

6.1 PROJECT ACCESS DRIVEWAYS

The proposed Project would gain access to the nearby roadway network via four (4) existing Project Driveways. The four project access driveways are described below:

- **Costco Entrance**: A full-access roadway that forms the southern leg of the signalized Kifer Road / Costco Driveway intersection. Vehicles traveling to the fuel stations via this driveway would navigate south through the Costco parking lot aisles to reach the fuel stations. Vehicles exiting the gas pumps and looking to go north on Lawrence Expressway are directed with signage to use this driveway to make a northbound left onto Kifer Road and ultimately a westbound right onto northbound Lawrence Expressway.
- **North Costco Driveway**: The North Costco Driveway forms a three-legged intersection with Lawrence Station Road and provides a direct east-west connection to the Costco Entrance roadway. This driveway is egress stop-controlled. Most vehicles traveling to the fuel pumps from Lawrence Station Road would most likely bypass this driveway in order to access the pumps via the Central Costco Driveway.
- **Central Costco Driveway**: The Central Costco driveway forms a three-legged intersection with Lawrence Station Road and provides the closest ingress to the fuel stations for vehicles on Lawrence Station Road. This driveway is egress stop-controlled.
- **South Costco Driveway:** The South Costco Driveway forms a three-legged intersection with Lawrence Station Road and is the primary egress point for vehicles that have just passed through the fuel stations and are looking to travel south on Lawrence Expressway. This driveway is egress-only and vehicles can turn right to head north on Lawrence Station Road or left to head towards the Caltrain Driveway or San Zeno Way.

6.1.1 INTERNAL QUEUEING AT PROJECT ACCESS DRIVEWAYS

Based on the HCM 2000 Synchro analysis, 95th percentile queues are projected to reach up to 25 feet (or one vehicle) for the North and Central Costco Driveways and up to 50 feet (or two vehicles) for the South Costco Driveway during the peak hours with the addition of Project trips. These projected queues would fit within available queueing storage and not block internal Costco parking aisles or circulation.

Based on HCM 2000 TRAFFIX analysis, northbound-left queues on the Costco Entrance Road are projected to be up to 237.5 feet per lane (total of 475 feet of queuing) with the addition of Project trips. There is currently dual left-turn lanes on this approach with a combined 660 feet of available storage, allowing for adequate storage-space for left-turning vehicles without blocking the main Costco internal circulation roadways.

6.1.2 RECOMMENDED PROJECT ACCESS DRIVEWAY IMPROVEMENTS

There are no recommended improvements at Project access driveways.

6.2 INTERNAL CIRCULATION

Internal circulation within the Costco parking area will remain the same as existing with the addition of the 10 fueling positions. As shown in the Project site plan (**Figure 2**), the additional fueling stations will be added onto the north side of the existing fuel pump structure, retaining the ten existing fuel pump lines while adding one fuel station to each line.

6.3 ON-SITE PARKING

The project proposes expanding the fuel canopy from 5,024-square-feet to 10,676-square-feet (proposed expansion of 5,652-square-feet) on the southwest corner of the Project site. The Costco Wholesale building on the Project site would remain as is (137,450-square-feet). The expansion would eliminate nine (9) standard parking stalls on the site (721 existing stalls, 712 proposed stalls) and the number of handicap parking stalls would remain the same (28 existing and proposed stalls). Due to the nature of the proposed Project, traffic generated by the new fueling positions is anticipated to have minimal effect on parking demand. Therefore, the proposed number of parking stalls is foreseen as adequate for the site.

6.4 FUEL STATION QUEUEING

The existing Costco fuel station has 10 pump queuing lanes (each lane serves two fueling positions), each with a queuing capacity of approximately 100 feet or four vehicles. If any of the queuing lanes exceed four vehicles, those additional vehicles begin to queue in the two parking lot aisles that lead to the fuel station queuing lanes. Queues in the two parking lot aisles can reach approximately 100 feet, or four vehicles, before extending to and potentially blocking the Central Costco Driveway.

Queue data collected during the AM and PM peak periods at the existing fuel station area shows a maximum single pump lane queue of three vehicles during the AM peak period and five vehicles during the PM peak period. PM peak period maximum queues of five vehicles were only reached at one queuing lane at a time, and could have been shorter if vehicles had redistributed to adjacent lanes with shorter queues. Therefore, only one vehicle was queued into the parking lot aisles at any given time during the PM peak period, and traffic did not block the Central Costco Driveway. The maximum number of queued vehicles in all lanes at any point in time was 17 vehicles in the AM peak period and 22 vehicles in the PM peak period (see **Appendix H** for an Existing PM Peak Hour queue diagram). In general, service time is estimated to be approximately four minutes per vehicle per pump based on observed counts. With 10 pump lanes and two fueling positions per lane, the existing fuel station configuration is able to serve approximately 0.5 vehicles per minute per lane, or five vehicles per minute total.

With the addition of ten extra fueling positions (resulting in three fueling positions per lane) the proposed fueling station would be able to serve approximately 0.75 vehicles per minute per lane (or 7.5 vehicles total would be served by the fuel station per minute). However, construction of the new pumps would also shorten the 10 pump queuing lanes from 100 feet to 75 feet (or from four vehicles to three vehicles). The Project is projected to generate a total of 156 PM peak hour trips entering the fueling station. Assuming an even arrival distribution, an average of 13 new vehicles would arrive at the fuel station every five minutes during the peak hour, increasing the demand for each fuel pump lane by one to two vehicles. Each new fueling position would be able to serve these one to two vehicles within approximately four to eight minutes, which results in a slight increase to queues over time. Taking into account vehicles redistributing to the shortest lines, the addition of trips generated by the Project is projected to increase queues by approximately one to two vehicles at each of the 10 queue lanes during the peak hours.

When the fueling station expansion is complete, the queuing lanes will be able to accommodate 30 queued vehicles (10 lanes which can accommodate 3 vehicles each) and the adjacent parking lot aisles will be able to accommodate eight (8) additional queued vehicles (two aisles which can accommodate four vehicles each). In total, 38 vehicles can queue for gas before queues reach and potentially block the Central Costco Driveway. Assuming a potential worst-case where each of the 10 queue lanes has an increased queue of two vehicles during the PM peak period, 20 additional vehicles would queue for gas. When added to the existing PM peak period maximum number of queued vehicles discussed above (22 vehicles), the projected worst-case maximum number of queued vehicles during the PM peak period would be 42 vehicles. Assuming an even distribution of vehicles, worst-case queues would extend through and beyond the Central Costco Driveway by four (4) additional vehicles (two vehicles in each of the two parking aisles north of the Central Costco Driveway). As such, this TOA recommends adding "Keep Clear" pavement markings on the Central Costco Driveway at these locations to prevent queued vehicles from blocking the driveway. See **Appendix I** for "Plus Project" PM Peak Hour fuel station queue diagram and recommended pavement markings.

7. POTENTIAL EFFECTS ON TRANSIT, BICYCLE, AND PEDESTRIAN FACILITIES AND SERVICES

This section discusses projected Project effects on study area transit, bicycle, and pedestrian facilities.

7.1 PROJECT EFFECTS ON TRANSIT OPERATIONS

7.1.1 TRANSIT VEHICLE DELAY (FOR INFORMATIONAL PURPOSES)

Busses operating on study roadway facilities could experience increased delay due to the addition of Project trips to study intersections and roadways. The two bus routes that operate on Project facilities are Route 328, which runs along Lawrence Expressway, and Shuttle Route 822, which runs along Kifer Road. The AM and PM peak hour delay experienced by each bus route within the project study area was determined by summing the through movement delays on Lawrence Expressway (northbound/southbound) and Kifer Road (eastbound/westbound) study intersections. The difference in No Project and Plus Project scenarios' through movement delays was calculated to determine how much peak hour delay the Project would add to study area transit routes. The additional delays experienced by study area transit routes due to Project generated trips are shown in **Table 9**.

Table 9. Transit Delay Caused by Project Generated Traffic

Transit Route	Roadway	Peak Hour	Additional Transit Delay (seconds) Caused by Project Generated Traffic			
			"Existing plus Project"		"Background plus Project"	
			NB/EB	SB/WB	NB/EB	SB/WB
328	Lawrence Expressway	AM	7.6	1.1	8.0	1.0
		PM	0.5	9.8	0.5	11.0
822	Kifer Road	AM	-0.8	-2.9	-0.6	-3.3
		PM	1.1	-0.5	0.7	-0.7

Note: All delay values were obtained using TRAFFIX software.

As shown in **Table 9**, the Project generated traffic is projected to increase transit delay for northbound and southbound Route 328 during the AM and PM peak hours under both "plus Project"

study conditions. The increased northbound/southbound transit delay follows the existing traffic distribution trend on Lawrence Expressway, as there is generally more traffic traveling northbound during the AM peak hour and southbound during the PM peak hour. The projected small increases in transit vehicle delay should not affect the overall schedule of the transit routes. Transit Route 822 is projected to see little to no increase in transit delay under "Existing plus Project" and "Background plus Project" conditions.

It should be noted that some changes in transit delay were calculated to be negative. This is due to how the analysis software calculates delay, and should be interpreted as showing that the Project trips would not increase transit delay.

Increased ridership on existing study-area bus or Caltrain routes due to the Project is not anticipated, as the Project is entirely vehicular in nature.

7.2 Project Effects on Pedestrian and Bicycle Facility Operations

The increase in vehicular traffic caused by the proposed Project is not anticipated to affect operations of pedestrian or bicycle facilities in the study area. Increased usage of pedestrian/bicycle facilities due to the Project is not anticipated, as the Project is entirely vehicular in nature. There are no pedestrian or bicycle improvements recommended.

8. Operational Deficiencies and Recommended Improvements

This chapter of the TOA evaluates the study intersection operations results presented in **Table 6** ("Existing plus Project" conditions) and **Table 8** ("Background plus Project" conditions) against the LOS operational deficiency criteria defined in the City and *VTA TIA Guidelines* and summarized in Section 1.5 of this report.

8.1 "Existing Plus Project" Operational Deficiencies and Recommended Improvements

<u>Intersection #1 – Kifer Road / San Zeno Way</u>

As illustrated in **Table 6**, the two-way stop-controlled Kifer Road / San Zeno Way intersection is projected to operate at unacceptable LOS "E" under "Existing" and "Existing plus Project" conditions during the PM peak hour. The addition of Project trips is not projected to cause the worst movement delay to degrade to from acceptable LOS "D" or better conditions to unacceptable LOS "E" or worse conditions. Therefore, based on unsignalized intersection deficiency criteria used in this TOA, the Project is not projected to cause an operational deficiency at the Kifer Road / San Zeno Way intersection under "Existing plus Project" conditions.

8.2 "Background Plus Project" Operational Deficiencies and Recommended Improvements

<u>Intersection #1 – Kifer Road / San Zeno Way</u>

As illustrated in **Table 8**, the two-way stop-controlled Kifer Road / San Zeno Way intersection is projected to operate at LOS "F" under "Background" and "Background plus Project" conditions during the PM peak hour. The addition of Project trips is not projected to cause the worst movement delay to degrade to from acceptable LOS "D" or better conditions to unacceptable LOS "E" or worse conditions. Therefore, based on unsignalized intersection deficiency criteria used in this TOA, the Project is not projected to cause an operational deficiency at the Kifer Road / San Zeno Way intersection under "Background plus Project" conditions.

9. QUEUING ANALYSIS, DEFICIENCIES, AND RECOMMENDED IMPROVEMENTS

9.1 QUEUEING ANALYSIS

Queuing analysis for left-turn movements was performed at all signalized study intersection approaches that contained one or more left-turn pockets. Queuing analysis for overall approach queues was performed for two-way stop-controlled intersections. **Table 10** shows total available storage length and total projected 95th percentile left-turn queues for each approach under "Existing", "Existing plus Project", "Background", and "Background plus Project" AM and PM peak hour conditions.

Table 10. Left-turn Pocket Queueing Analysis

#	Intersection	Approach	Available Pocket Length (ft)[1]	Peak Hour	Number of Trips Added	Projected Queue Length (ft)[2]			
						Existing (Existing plus Project)		Background (Background plus Project)	
1	Kifer Road / San Zeno Way	NB	410	AM	43	25	(25)	25	(25)
				PM	36	175	(225)	300	(400)
2	Kifer Road / Lawrence Expressway	NBL	660	AM	0	300	(325)	450	(450)
				PM	0	75	(75)	150	(150)
		SBL	660	AM	58	275	(375)	275	(375)
				PM	49	550	(625)	550	(625)
		EBL	360	AM	0	175	(175)	**375**	**(375)**
				PM	0	275	(275)	**625**	**(625)**
		WBL	250	AM	15	125	(150)	125	(150)
				PM	13	**475**	**(500)**	**475**	**(500)**
3	Kifer Road / Lawrence Station Road	NB	130	AM	3	25	(25)	25	(25)
				PM	1	50	(50)	50	(50)
4	Kifer Road / Costco Entrance	NBL	660	AM	79	175	(275)	175	(300)
				PM	64	425	(475)	425	(475)
		WBL	250	AM	7	100	(100)	100	(100)
				PM	3	200	(225)	200	(225)
5	North Costco Driveway / Lawrence Station Road	SB	200	AM	78	0	(25)	0	(25)
				PM	52	25	(25)	25	(25)
		WB	50	AM	0	25	(25)	25	(25)
				PM	0	25	(25)	25	(25)
6	Central Costco Driveway / Lawrence Station Road	SB	325	AM	68	25	(25)	25	(25)
				PM	45	25	(25)	25	(25)
		WB	50	AM	0	0	()	0	()
				PM	0	25	(25)	25	(25)
7	South Costco Driveway / Lawrence Station Road	WB	50	AM	46	25	(25)	25	(25)
				PM	37	25	(50)	25	(50)

#	Intersection	Approach	Available Pocket Length (ft)[1]	Peak Hour	Number of Trips Added	Projected Queue Length (ft)[2]	
						Existing (Existing plus Project)	Background (Background plus Project)
8	Caltrain Driveway / Lawrence Station Road	WB	80	AM	0	25 (25)	25 (25)
				PM	0	25 (25)	25 (25)

*Notes: **Bold** values show queues projected to exceed available storage.*
***Highlighted** values show queuing deficiencies exacerbated by Project generated traffic.*
1. Total storage length provided by all left-turn pockets (signalized intersections) and approach/throat depth (two-way stop-controlled intersections).
2. Total queued vehicle length in all pockets. All queue lengths were rounded up to the neared 25 foot increment.

As shown in **Table 10**, 95th percentile left-turn queues are projected to exceed the available storage length at the following intersections under "Existing", "Existing plus Project", "Background", or "Background plus Project" AM and/or PM peak hour conditions:

- Intersection 2 – Kifer Road / Lawrence Expressway (EBL)
- Intersection 2 – Kifer Road / Lawrence Expressway (WBL)

9.2 Project Queueing Deficiencies and Recommended Improvements

Based on discussion with City staff, this TOA assumes a queuing deficiency occurs when one of the following conditions is met:

1. A queuing deficiency would occur when the addition of Project trips causes the 95th percentile queue to exceed available storage length (when the 95th percentile queue did not exceed storage length before the addition of Project trips).
2. Where the 95th percentile queue already exceeds the turn pocket length under "no project" conditions, a queuing deficiency would occur if Project traffic lengthens the 95th percentile queue by 25 feet or more.

As shown in **Table 10**, Project generated trips are projected to cause queuing deficiencies at the Kifer Road / Lawrence Expressway westbound-left movement during the PM peak hour under "Existing plus Project" and "Background plus Project" conditions. In both cases, the movement already experiences queues that exceed available storage length before the addition of Project trips. Under both "with Project" conditions, queueing at this movement is projected to increase by 25 feet, or one vehicle.

An additional 250 feet of storage would be needed to accommodate the projected worst-case "Existing plus Project" and "Background plus Project" PM peak hour conditions queueing for the westbound left-turn queue. Lengthening the Kifer Road / Lawrence Expressway westbound left-turn pockets may not be feasible, as there are existing north-south cross streets and driveways on either side of Lawrence Expressway, as well as directly adjacent turn pockets for the opposite travel direction. Additionally, the westbound left-turn pocket is not planned to be lengthened as part of the City of Santa Clara Lawrence Station Area Project for Kifer Road. As such, Project related queueing deficiencies could potentially be improved by implementation of the City's Intelligent Transportation System (ITS) strategies and projects along Kifer Road, which is a City facility. The Project would be required to contribute to these ITS strategies. Lawrence Expressway would require separate improvements because it is a County facility. The queueing deficiencies identified in this report are operational only and do not rise to the level of a CEQA impact.

Appendix A
Synchro and TRAFFIX HCM 2000 Outputs

150 Lawrence Station TOA
Existing AM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	252	92	0	1004	0	80
Future Volume (Veh/h)	252	92	0	1004	0	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	263	96	0	1046	0	83
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.90	
vC, conflicting volume			375		850	196
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		606	196
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		100	90
cM capacity (veh/h)			1162		379	801

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	175	184	523	523	83
Volume Left	0	0	0	0	0
Volume Right	0	96	0	0	83
cSH	1700	1700	1700	1700	801
Volume to Capacity	0.10	0.11	0.31	0.31	0.10
Queue Length 95th (ft)	0	0	0	0	9
Control Delay (s)	0.0	0.0	0.0	0.0	10.0
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.0
Approach LOS					B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing AM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	457	272	0	721	0	96
Future Volume (Veh/h)	457	272	0	721	0	96
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	481	286	0	759	0	101
Pedestrians					5	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.97		0.92	0.97
vC, conflicting volume			772		1008	388
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			700		675	304
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		100	85
cM capacity (veh/h)			861		354	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	321	446	380	380	101
Volume Left	0	0	0	0	0
Volume Right	0	286	0	0	101
cSH	1700	1700	1700	1700	667
Volume to Capacity	0.19	0.26	0.22	0.22	0.15
Queue Length 95th (ft)	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	11.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.4
Approach LOS					B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing AM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	2	93	8	6	275
Future Volume (Veh/h)	15	2	93	8	6	275
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	2	96	8	6	284
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	414	118			113	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	118			113	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	582	918			1464	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	104	6	284
Volume Left	15	0	6	0
Volume Right	2	8	0	0
cSH	608	1700	1464	1700
Volume to Capacity	0.03	0.06	0.00	0.17
Queue Length 95th (ft)	2	0	0	0
Control Delay (s)	11.1	0.0	7.5	0.0
Lane LOS	B		A	
Approach Delay (s)	11.1	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing AM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	1	100	23	221	69
Future Volume (Veh/h)	2	1	100	23	221	69
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	1	105	24	233	73
Pedestrians	10		10			10
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	676	137			139	
vC1, stage 1 conf vol	127					
vC2, stage 2 conf vol	549					
vCu, unblocked vol	676	137			139	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			84	
cM capacity (veh/h)	462	894			1431	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	3	129	233	73
Volume Left	2	0	233	0
Volume Right	1	24	0	0
cSH	551	1700	1431	1700
Volume to Capacity	0.01	0.08	0.16	0.04
Queue Length 95th (ft)	0	0	15	0
Control Delay (s)	11.6	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	11.6	0.0	6.1	
Approach LOS	B			

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing AM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	68	55	0	0	71
Future Volume (Veh/h)	70	68	55	0	0	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	84	82	66	0	0	86
Pedestrians			12			12
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	164	78			66	
vC1, stage 1 conf vol	66					
vC2, stage 2 conf vol	98					
vCu, unblocked vol	164	78			66	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	92			100	
cM capacity (veh/h)	872	971			1536	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	166	66	86
Volume Left	84	0	0
Volume Right	82	0	0
cSH	918	1700	1700
Volume to Capacity	0.18	0.04	0.05
Queue Length 95th (ft)	16	0	0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing AM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	14	41	4	14	127
Future Volume (Veh/h)	14	14	41	4	14	127
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	17	17	49	5	17	153
Pedestrians			3			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)						
pX, platoon unblocked						
vC, conflicting volume	242	54			54	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	242	54			54	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	737	1010			1551	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	54	170
Volume Left	17	0	17
Volume Right	17	5	0
cSH	852	1700	1551
Volume to Capacity	0.04	0.03	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	9.4	0.0	0.8
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	0.8
Approach LOS	A		

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing PM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1071	54	0	393	0	278
Future Volume (Veh/h)	1071	54	0	393	0	278
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1190	60	0	437	0	309
Pedestrians					14	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.94	
vC, conflicting volume			1264		1452	639
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1264		1359	639
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		100	25
cM capacity (veh/h)			538		130	413

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	793	457	218	218	309
Volume Left	0	0	0	0	0
Volume Right	0	60	0	0	309
cSH	1700	1700	1700	1700	413
Volume to Capacity	0.47	0.27	0.13	0.13	0.75
Queue Length 95th (ft)	0	0	0	0	152
Control Delay (s)	0.0	0.0	0.0	0.0	35.4
Lane LOS					E
Approach Delay (s)	0.0		0.0		35.4
Approach LOS					E

Intersection Summary			
Average Delay	5.5		
Intersection Capacity Utilization	55.3%	ICU Level of Service	B
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing PM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	840	431	0	878	0	167
Future Volume (Veh/h)	840	431	0	878	0	167
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	894	459	0	934	0	178
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.86		0.90	0.86
vC, conflicting volume			1357		1594	680
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1082		1010	292
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		100	70
cM capacity (veh/h)			546		212	601

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	596	757	467	467	178
Volume Left	0	0	0	0	0
Volume Right	0	459	0	0	178
cSH	1700	1700	1700	1700	601
Volume to Capacity	0.35	0.45	0.27	0.27	0.30
Queue Length 95th (ft)	0	0	0	0	31
Control Delay (s)	0.0	0.0	0.0	0.0	13.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		13.5
Approach LOS					B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	54.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing PM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	33	122	17	213	219
Future Volume (Veh/h)	46	33	122	17	213	219
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	49	35	131	18	229	235
Pedestrians	7		7			7
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	847	154			156	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	847	154			156	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			84	
cM capacity (veh/h)	275	880			1415	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	84	149	229	235
Volume Left	49	0	229	0
Volume Right	35	18	0	0
cSH	385	1700	1415	1700
Volume to Capacity	0.22	0.09	0.16	0.14
Queue Length 95th (ft)	20	0	14	0
Control Delay (s)	16.9	0.0	8.0	0.0
Lane LOS	C		A	
Approach Delay (s)	16.9	0.0	4.0	
Approach LOS	C			

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing PM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	71	14	124	42	199	67
Future Volume (Veh/h)	71	14	124	42	199	67
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	72	14	127	43	203	68
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	640	166			179	
vC1, stage 1 conf vol	158					
vC2, stage 2 conf vol	483					
vCu, unblocked vol	640	166			179	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	98			85	
cM capacity (veh/h)	502	863			1385	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	86	170	203	68
Volume Left	72	0	203	0
Volume Right	14	43	0	0
cSH	538	1700	1385	1700
Volume to Capacity	0.16	0.10	0.15	0.04
Queue Length 95th (ft)	14	0	13	0
Control Delay (s)	13.0	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	13.0	0.0	6.0	
Approach LOS	B			

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing PM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	106	59	112	0	0	141
Future Volume (Veh/h)	106	59	112	0	0	141
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	110	61	117	0	0	147
Pedestrians			28			28
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			3			3
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	292	145			117	
vC1, stage 1 conf vol	117					
vC2, stage 2 conf vol	175					
vCu, unblocked vol	292	145			117	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	93			100	
cM capacity (veh/h)	781	878			1471	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	171	117	147
Volume Left	110	0	0
Volume Right	61	0	0
cSH	813	1700	1700
Volume to Capacity	0.21	0.07	0.09
Queue Length 95th (ft)	20	0	0
Control Delay (s)	10.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing PM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	28	84	1	13	234
Future Volume (Veh/h)	9	28	84	1	13	234
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	29	88	1	14	244
Pedestrians			8			8
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	368	96			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	368	96			89	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	97			99	
cM capacity (veh/h)	621	952			1506	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	89	258
Volume Left	9	0	14
Volume Right	29	1	0
cSH	846	1700	1506
Volume to Capacity	0.04	0.05	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.5	0.0	0.5
Lane LOS	A		A
Approach Delay (s)	9.5	0.0	0.5
Approach LOS	A		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	32.0%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus Project AM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	258	93	0	1011	0	123
Future Volume (Veh/h)	258	93	0	1011	0	123
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	269	97	0	1053	0	128
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.90	
vC, conflicting volume			382		860	199
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			382		622	199
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		100	84
cM capacity (veh/h)			1155		371	796

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	179	187	526	526	128
Volume Left	0	0	0	0	0
Volume Right	0	97	0	0	128
cSH	1700	1700	1700	1700	796
Volume to Capacity	0.11	0.11	0.31	0.31	0.16
Queue Length 95th (ft)	0	0	0	0	14
Control Delay (s)	0.0	0.0	0.0	0.0	10.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.4
Approach LOS					B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus Project AM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	500	350	0	800	0	99
Future Volume (Veh/h)	500	350	0	800	0	99
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	526	368	0	842	0	104
Pedestrians					5	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.97		0.92	0.97
vC, conflicting volume			899		1136	452
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			830		812	369
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		100	83
cM capacity (veh/h)			769		289	606

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	351	543	421	421	104
Volume Left	0	0	0	0	0
Volume Right	0	368	0	0	104
cSH	1700	1700	1700	1700	606
Volume to Capacity	0.21	0.32	0.25	0.25	0.17
Queue Length 95th (ft)	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	12.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.2
Approach LOS					B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus Project AM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	2	96	8	16	343
Future Volume (Veh/h)	15	2	96	8	16	343
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	2	99	8	16	354
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	507	121			116	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	507	121			116	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			99	
cM capacity (veh/h)	511	914			1460	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	107	16	354
Volume Left	15	0	16	0
Volume Right	2	8	0	0
cSH	539	1700	1460	1700
Volume to Capacity	0.03	0.06	0.01	0.21
Queue Length 95th (ft)	2	0	1	0
Control Delay (s)	11.9	0.0	7.5	0.0
Lane LOS	B		A	
Approach Delay (s)	11.9	0.0	0.3	
Approach LOS	B			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	30.6%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus Project AM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	1	103	24	289	69
Future Volume (Veh/h)	2	1	103	24	289	69
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	1	108	25	304	73
Pedestrians	10		10			10
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	822	140			143	
vC1, stage 1 conf vol	130					
vC2, stage 2 conf vol	691					
vCu, unblocked vol	822	140			143	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			79	
cM capacity (veh/h)	375	890			1426	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	3	133	304	73
Volume Left	2	0	304	0
Volume Right	1	25	0	0
cSH	464	1700	1426	1700
Volume to Capacity	0.01	0.08	0.21	0.04
Queue Length 95th (ft)	0	0	20	0
Control Delay (s)	12.8	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	12.8	0.0	6.6	
Approach LOS	B			

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus Project AM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	113	71	56	0	0	71
Future Volume (Veh/h)	113	71	56	0	0	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	136	86	67	0	0	86
Pedestrians			12			12
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	165	79			67	
vC1, stage 1 conf vol	67					
vC2, stage 2 conf vol	98					
vCu, unblocked vol	165	79			67	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	91			100	
cM capacity (veh/h)	871	970			1535	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	222	67	86
Volume Left	136	0	0
Volume Right	86	0	0
cSH	907	1700	1700
Volume to Capacity	0.24	0.04	0.05
Queue Length 95th (ft)	24	0	0
Control Delay (s)	10.2	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.2	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus Project AM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	14	42	4	14	170
Future Volume (Veh/h)	14	14	42	4	14	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	17	17	51	5	17	205
Pedestrians			3			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)						
pX, platoon unblocked						
vC, conflicting volume	296	56			56	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	56			56	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			99	
cM capacity (veh/h)	686	1007			1549	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	34	56	222
Volume Left	17	0	17
Volume Right	17	5	0
cSH	816	1700	1549
Volume to Capacity	0.04	0.03	0.01
Queue Length 95th (ft)	3	0	1
Control Delay (s)	9.6	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	27.3%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus project PM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1073	55	0	396	0	314
Future Volume (Veh/h)	1073	55	0	396	0	314
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1192	61	0	440	0	349
Pedestrians					14	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.95	
vC, conflicting volume			1267		1456	640
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1267		1377	640
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		100	15
cM capacity (veh/h)			537		128	412

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	795	458	220	220	349
Volume Left	0	0	0	0	0
Volume Right	0	61	0	0	349
cSH	1700	1700	1700	1700	412
Volume to Capacity	0.47	0.27	0.13	0.13	0.85
Queue Length 95th (ft)	0	0	0	0	204
Control Delay (s)	0.0	0.0	0.0	0.0	46.5
Lane LOS					E
Approach Delay (s)	0.0		0.0		46.5
Approach LOS					E

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus project PM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	887	483	0	942	0	168
Future Volume (Veh/h)	887	483	0	942	0	168
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	944	514	0	1002	0	179
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.88		0.92	0.88
vC, conflicting volume			1462		1706	733
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1250		1152	420
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		100	65
cM capacity (veh/h)			484		176	509

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	629	829	501	501	179
Volume Left	0	0	0	0	0
Volume Right	0	514	0	0	179
cSH	1700	1700	1700	1700	509
Volume to Capacity	0.37	0.49	0.29	0.29	0.35
Queue Length 95th (ft)	0	0	0	0	39
Control Delay (s)	0.0	0.0	0.0	0.0	15.8
Lane LOS					C
Approach Delay (s)	0.0		0.0		15.8
Approach LOS					C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus project PM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	33	123	17	220	264
Future Volume (Veh/h)	46	33	123	17	220	264
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	49	35	132	18	237	284
Pedestrians	7		7			7
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	913	155			157	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	913	155			157	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	96			83	
cM capacity (veh/h)	249	879			1413	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	84	150	237	284
Volume Left	49	0	237	0
Volume Right	35	18	0	0
cSH	355	1700	1413	1700
Volume to Capacity	0.24	0.09	0.17	0.17
Queue Length 95th (ft)	23	0	15	0
Control Delay (s)	18.2	0.0	8.1	0.0
Lane LOS	C		A	
Approach Delay (s)	18.2	0.0	3.7	
Approach LOS	C			

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus project PM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	71	14	125	43	244	67
Future Volume (Veh/h)	71	14	125	43	244	67
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	72	14	128	44	249	68
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	734	168			181	
vC1, stage 1 conf vol	159					
vC2, stage 2 conf vol	575					
vCu, unblocked vol	734	168			181	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	98			82	
cM capacity (veh/h)	439	861			1382	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	86	172	249	68
Volume Left	72	0	249	0
Volume Right	14	44	0	0
cSH	477	1700	1382	1700
Volume to Capacity	0.18	0.10	0.18	0.04
Queue Length 95th (ft)	16	0	16	0
Control Delay (s)	14.2	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	14.2	0.0	6.4	
Approach LOS	B			

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus project PM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	142	60	113	0	0	141
Future Volume (Veh/h)	142	60	113	0	0	141
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	148	63	118	0	0	147
Pedestrians			28			28
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			3			3
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	293	146			118	
vC1, stage 1 conf vol	118					
vC2, stage 2 conf vol	175					
vCu, unblocked vol	293	146			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	93			100	
cM capacity (veh/h)	781	877			1470	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	211	118	147
Volume Left	148	0	0
Volume Right	63	0	0
cSH	807	1700	1700
Volume to Capacity	0.26	0.07	0.09
Queue Length 95th (ft)	26	0	0
Control Delay (s)	11.0	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.0	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Existing plus project PM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	9	28	85	1	13	270
Future Volume (Veh/h)	9	28	85	1	13	270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	9	29	89	1	14	281
Pedestrians			8			8
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	406	98			90	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	406	98			90	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	590	951			1505	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	90	295
Volume Left	9	0	14
Volume Right	29	1	0
cSH	831	1700	1505
Volume to Capacity	0.05	0.05	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.5	0.0	0.4
Lane LOS	A		A
Approach Delay (s)	9.5	0.0	0.4
Approach LOS	A		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background AM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	429	92	0	1363	0	82
Future Volume (Veh/h)	429	92	0	1363	0	82
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	447	96	0	1420	0	85
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.89	
vC, conflicting volume			559		1221	288
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			559		999	288
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		100	88
cM capacity (veh/h)			993		210	698

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	298	245	710	710	85
Volume Left	0	0	0	0	0
Volume Right	0	96	0	0	85
cSH	1700	1700	1700	1700	698
Volume to Capacity	0.18	0.14	0.42	0.42	0.12
Queue Length 95th (ft)	0	0	0	0	10
Control Delay (s)	0.0	0.0	0.0	0.0	10.9
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.9
Approach LOS					B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background AM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	471	274	0	753	0	96
Future Volume (Veh/h)	471	274	0	753	0	96
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	496	288	0	793	0	101
Pedestrians					5	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.97		0.91	0.97
vC, conflicting volume			789		1042	397
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			709		679	303
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		100	85
cM capacity (veh/h)			851		349	666

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	331	453	396	396	101
Volume Left	0	0	0	0	0
Volume Right	0	288	0	0	101
cSH	1700	1700	1700	1700	666
Volume to Capacity	0.19	0.27	0.23	0.23	0.15
Queue Length 95th (ft)	0	0	0	0	13
Control Delay (s)	0.0	0.0	0.0	0.0	11.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.4
Approach LOS					B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background AM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	2	93	10	6	277
Future Volume (Veh/h)	15	2	93	10	6	277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	2	96	10	6	286
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	417	119			115	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	417	119			115	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			100	
cM capacity (veh/h)	580	917			1461	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	106	6	286
Volume Left	15	0	6	0
Volume Right	2	10	0	0
cSH	606	1700	1461	1700
Volume to Capacity	0.03	0.06	0.00	0.17
Queue Length 95th (ft)	2	0	0	0
Control Delay (s)	11.1	0.0	7.5	0.0
Lane LOS	B		A	
Approach Delay (s)	11.1	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background AM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	1	102	23	221	71
Future Volume (Veh/h)	2	1	102	23	221	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	1	107	24	233	75
Pedestrians	10		10			10
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	680	139			141	
vC1, stage 1 conf vol	129					
vC2, stage 2 conf vol	551					
vCu, unblocked vol	680	139			141	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			84	
cM capacity (veh/h)	461	892			1428	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	3	131	233	75
Volume Left	2	0	233	0
Volume Right	1	24	0	0
cSH	549	1700	1428	1700
Volume to Capacity	0.01	0.08	0.16	0.04
Queue Length 95th (ft)	0	0	15	0
Control Delay (s)	11.6	0.0	8.0	0.0
Lane LOS	B		A	
Approach Delay (s)	11.6	0.0	6.1	
Approach LOS	B			

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background AM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	68	57	0	0	73
Future Volume (Veh/h)	70	68	57	0	0	73
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	84	82	69	0	0	88
Pedestrians			12			12
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	169	81			69	
vC1, stage 1 conf vol	69					
vC2, stage 2 conf vol	100					
vCu, unblocked vol	169	81			69	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	92			100	
cM capacity (veh/h)	869	968			1532	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	166	69	88
Volume Left	84	0	0
Volume Right	82	0	0
cSH	915	1700	1700
Volume to Capacity	0.18	0.04	0.05
Queue Length 95th (ft)	17	0	0
Control Delay (s)	9.8	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.8	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background AM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	16	41	4	16	127
Future Volume (Veh/h)	16	16	41	4	16	127
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	19	19	49	5	19	153
Pedestrians			3			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)						
pX, platoon unblocked						
vC, conflicting volume	246	54			54	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	246	54			54	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			99	
cM capacity (veh/h)	732	1010			1551	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	54	172
Volume Left	19	0	19
Volume Right	19	5	0
cSH	848	1700	1551
Volume to Capacity	0.04	0.03	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.4	0.0	0.9
Lane LOS	A		A
Approach Delay (s)	9.4	0.0	0.9
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background PM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1446	54	0	600	0	281
Future Volume (Veh/h)	1446	54	0	600	0	281
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1607	60	0	667	0	312
Pedestrians					14	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.95	
vC, conflicting volume			1681		1984	848
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1681		1928	848
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		100	0
cM capacity (veh/h)			372		54	301

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1071	596	334	334	312
Volume Left	0	0	0	0	0
Volume Right	0	60	0	0	312
cSH	1700	1700	1700	1700	301
Volume to Capacity	0.63	0.35	0.20	0.20	1.04
Queue Length 95th (ft)	0	0	0	0	288
Control Delay (s)	0.0	0.0	0.0	0.0	100.4
Lane LOS					F
Approach Delay (s)	0.0		0.0		100.4
Approach LOS					F

Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

150 Lawrence Station TOA
Background PM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	871	435	0	898	0	167
Future Volume (Veh/h)	871	435	0	898	0	167
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	927	463	0	955	0	178
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.87		0.92	0.87
vC, conflicting volume			1394		1640	699
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1155		1048	356
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		100	68
cM capacity (veh/h)			521		204	555

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	618	772	478	478	178
Volume Left	0	0	0	0	0
Volume Right	0	463	0	0	178
cSH	1700	1700	1700	1700	555
Volume to Capacity	0.36	0.45	0.28	0.28	0.32
Queue Length 95th (ft)	0	0	0	0	34
Control Delay (s)	0.0	0.0	0.0	0.0	14.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		14.5
Approach LOS					B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

150 Lawrence Station TOA
Background PM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	33	122	20	213	223
Future Volume (Veh/h)	46	33	122	20	213	223
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	49	35	131	22	229	240
Pedestrians	7		7			7
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	854	156			160	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	854	156			160	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	82	96			84	
cM capacity (veh/h)	272	878			1410	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	84	153	229	240
Volume Left	49	0	229	0
Volume Right	35	22	0	0
cSH	382	1700	1410	1700
Volume to Capacity	0.22	0.09	0.16	0.14
Queue Length 95th (ft)	21	0	14	0
Control Delay (s)	17.1	0.0	8.0	0.0
Lane LOS	C		A	
Approach Delay (s)	17.1	0.0	3.9	
Approach LOS	C			

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	37.3%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background PM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	71	14	127	42	199	71
Future Volume (Veh/h)	71	14	127	42	199	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	72	14	130	43	203	72
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	648	170			182	
vC1, stage 1 conf vol	160					
vC2, stage 2 conf vol	487					
vCu, unblocked vol	648	170			182	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	98			85	
cM capacity (veh/h)	499	859			1381	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	86	173	203	72
Volume Left	72	0	203	0
Volume Right	14	43	0	0
cSH	536	1700	1381	1700
Volume to Capacity	0.16	0.10	0.15	0.04
Queue Length 95th (ft)	14	0	13	0
Control Delay (s)	13.0	0.0	8.1	0.0
Lane LOS	B		A	
Approach Delay (s)	13.0	0.0	5.9	
Approach LOS	B			

Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background PM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	106	59	115	0	0	145
Future Volume (Veh/h)	106	59	115	0	0	145
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	110	61	120	0	0	151
Pedestrians			28			28
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			3			3
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	299	148			120	
vC1, stage 1 conf vol	120					
vC2, stage 2 conf vol	179					
vCu, unblocked vol	299	148			120	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	93			100	
cM capacity (veh/h)	777	875			1468	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	171	120	151
Volume Left	110	0	0
Volume Right	61	0	0
cSH	809	1700	1700
Volume to Capacity	0.21	0.07	0.09
Queue Length 95th (ft)	20	0	0
Control Delay (s)	10.6	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background PM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	31	84	1	17	234
Future Volume (Veh/h)	12	31	84	1	17	234
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	13	32	88	1	18	244
Pedestrians			8			8
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	376	96			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	376	96			89	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	613	952			1506	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	45	89	262
Volume Left	13	0	18
Volume Right	32	1	0
cSH	821	1700	1506
Volume to Capacity	0.05	0.05	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.6	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project AM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	435	93	0	1370	0	125
Future Volume (Veh/h)	435	93	0	1370	0	125
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	453	97	0	1427	0	130
Pedestrians					16	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					2	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.89	
vC, conflicting volume			566		1231	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			566		1014	291
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		100	81
cM capacity (veh/h)			987		206	695

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	302	248	714	714	130
Volume Left	0	0	0	0	0
Volume Right	0	97	0	0	130
cSH	1700	1700	1700	1700	695
Volume to Capacity	0.18	0.15	0.42	0.42	0.19
Queue Length 95th (ft)	0	0	0	0	17
Control Delay (s)	0.0	0.0	0.0	0.0	11.4
Lane LOS					B
Approach Delay (s)	0.0		0.0		11.4
Approach LOS					B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project AM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	514	352	0	832	0	99
Future Volume (Veh/h)	514	352	0	832	0	99
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	541	371	0	876	0	104
Pedestrians					5	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.96		0.91	0.96
vC, conflicting volume			917		1170	461
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			841		818	368
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		100	83
cM capacity (veh/h)			759		285	604

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	361	551	438	438	104
Volume Left	0	0	0	0	0
Volume Right	0	371	0	0	104
cSH	1700	1700	1700	1700	604
Volume to Capacity	0.21	0.32	0.26	0.26	0.17
Queue Length 95th (ft)	0	0	0	0	15
Control Delay (s)	0.0	0.0	0.0	0.0	12.2
Lane LOS					B
Approach Delay (s)	0.0		0.0		12.2
Approach LOS					B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project AM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	2	96	10	16	345
Future Volume (Veh/h)	15	2	96	10	16	345
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	2	99	10	16	356
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	510	122			118	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	122			118	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			99	
cM capacity (veh/h)	509	913			1458	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	17	109	16	356
Volume Left	15	0	16	0
Volume Right	2	10	0	0
cSH	537	1700	1458	1700
Volume to Capacity	0.03	0.06	0.01	0.21
Queue Length 95th (ft)	2	0	1	0
Control Delay (s)	11.9	0.0	7.5	0.0
Lane LOS	B		A	
Approach Delay (s)	11.9	0.0	0.3	
Approach LOS	B			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project AM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	1	105	24	289	71
Future Volume (Veh/h)	2	1	105	24	289	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	2	1	111	25	304	75
Pedestrians	10		10			10
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	826	144			146	
vC1, stage 1 conf vol	134					
vC2, stage 2 conf vol	693					
vCu, unblocked vol	826	144			146	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			79	
cM capacity (veh/h)	373	887			1422	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	3	136	304	75
Volume Left	2	0	304	0
Volume Right	1	25	0	0
cSH	463	1700	1422	1700
Volume to Capacity	0.01	0.08	0.21	0.04
Queue Length 95th (ft)	0	0	20	0
Control Delay (s)	12.8	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	12.8	0.0	6.6	
Approach LOS	B			

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project AM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	113	71	58	0	0	73
Future Volume (Veh/h)	113	71	58	0	0	73
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	136	86	70	0	0	88
Pedestrians			12			12
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	170	82			70	
vC1, stage 1 conf vol	70					
vC2, stage 2 conf vol	100					
vCu, unblocked vol	170	82			70	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	91			100	
cM capacity (veh/h)	868	967			1531	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	222	70	88
Volume Left	136	0	0
Volume Right	86	0	0
cSH	904	1700	1700
Volume to Capacity	0.25	0.04	0.05
Queue Length 95th (ft)	24	0	0
Control Delay (s)	10.3	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.3	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project AM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	16	42	4	16	170
Future Volume (Veh/h)	16	16	42	4	16	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	19	19	51	5	19	205
Pedestrians			3			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)						
pX, platoon unblocked						
vC, conflicting volume	300	56			56	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	300	56			56	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			99	
cM capacity (veh/h)	681	1007			1549	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	56	224
Volume Left	19	0	19
Volume Right	19	5	0
cSH	813	1700	1549
Volume to Capacity	0.05	0.03	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.6	0.0	0.7
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	0.7
Approach LOS	A		

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project PM Peak Hour

1: San Zeno Way & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1448	55	0	603	0	317
Future Volume (Veh/h)	1448	55	0	603	0	317
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1609	61	0	670	0	352
Pedestrians					14	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)				255		
pX, platoon unblocked					0.95	
vC, conflicting volume			1684		1988	849
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1684		1932	849
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		100	0
cM capacity (veh/h)			371		54	300

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	1073	597	335	335	352
Volume Left	0	0	0	0	0
Volume Right	0	61	0	0	352
cSH	1700	1700	1700	1700	300
Volume to Capacity	0.63	0.35	0.20	0.20	1.17
Queue Length 95th (ft)	0	0	0	0	379
Control Delay (s)	0.0	0.0	0.0	0.0	144.2
Lane LOS					F
Approach Delay (s)	0.0		0.0		144.2
Approach LOS					F

Intersection Summary			
Average Delay	18.9		
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project PM Peak Hour

3: Lawrence Station Rd & Kifer Rd

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	918	487	0	962	0	168
Future Volume (Veh/h)	918	487	0	962	0	168
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	977	518	0	1023	0	179
Pedestrians					4	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	225			397		
pX, platoon unblocked			0.87		0.92	0.87
vC, conflicting volume			1499		1752	752
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1274		1168	415
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		100	65
cM capacity (veh/h)			469		170	508

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	651	844	512	512	179
Volume Left	0	0	0	0	0
Volume Right	0	518	0	0	179
cSH	1700	1700	1700	1700	508
Volume to Capacity	0.38	0.50	0.30	0.30	0.35
Queue Length 95th (ft)	0	0	0	0	39
Control Delay (s)	0.0	0.0	0.0	0.0	15.9
Lane LOS					C
Approach Delay (s)	0.0		0.0		15.9
Approach LOS					C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project PM Peak Hour

5: Lawrence Station Rd & North Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	33	123	20	220	268
Future Volume (Veh/h)	46	33	123	20	220	268
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	49	35	132	22	237	288
Pedestrians	7		7			7
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	919	157			161	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	919	157			161	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	96			83	
cM capacity (veh/h)	247	877			1409	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	84	154	237	288
Volume Left	49	0	237	0
Volume Right	35	22	0	0
cSH	353	1700	1409	1700
Volume to Capacity	0.24	0.09	0.17	0.17
Queue Length 95th (ft)	23	0	15	0
Control Delay (s)	18.4	0.0	8.1	0.0
Lane LOS	C		A	
Approach Delay (s)	18.4	0.0	3.6	
Approach LOS	C			

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project PM Peak Hour

6: Lawrence Station Rd & Central Costco Dwy

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	71	14	128	43	244	71
Future Volume (Veh/h)	71	14	128	43	244	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	72	14	131	44	249	72
Pedestrians	9		9			9
Lane Width (ft)	12.0		12.0			12.0
Walking Speed (ft/s)	3.5		3.5			3.5
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	741	171			184	
vC1, stage 1 conf vol	162					
vC2, stage 2 conf vol	579					
vCu, unblocked vol	741	171			184	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	98			82	
cM capacity (veh/h)	437	858			1379	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	86	175	249	72
Volume Left	72	0	249	0
Volume Right	14	44	0	0
cSH	475	1700	1379	1700
Volume to Capacity	0.18	0.10	0.18	0.04
Queue Length 95th (ft)	16	0	16	0
Control Delay (s)	14.3	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	14.3	0.0	6.3	
Approach LOS	B			

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project PM Peak Hour

7: South Costco Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	142	60	116	0	0	145
Future Volume (Veh/h)	142	60	116	0	0	145
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	148	63	121	0	0	151
Pedestrians			28			28
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			3			3
Right turn flare (veh)						
Median type			None			TWLTL
Median storage veh)						2
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	300	149			121	
vC1, stage 1 conf vol	121					
vC2, stage 2 conf vol	179					
vCu, unblocked vol	300	149			121	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	93			100	
cM capacity (veh/h)	777	874			1467	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	211	121	151
Volume Left	148	0	0
Volume Right	63	0	0
cSH	803	1700	1700
Volume to Capacity	0.26	0.07	0.09
Queue Length 95th (ft)	26	0	0
Control Delay (s)	11.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station TOA
Background plus Project PM Peak Hour

8: Caltrain Dwy & Lawrence Station Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	31	85	1	17	270
Future Volume (Veh/h)	12	31	85	1	17	270
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	13	32	89	1	18	281
Pedestrians			8			8
Lane Width (ft)			12.0			12.0
Walking Speed (ft/s)			3.5			3.5
Percent Blockage			1			1
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	414	98			90	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	98			90	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	97			99	
cM capacity (veh/h)	583	951			1505	

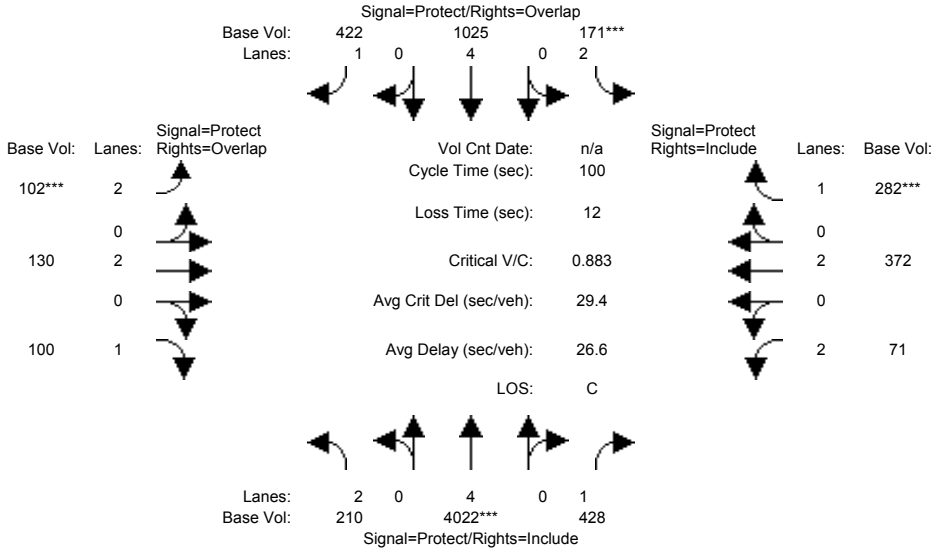
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	45	90	299
Volume Left	13	0	18
Volume Right	32	1	0
cSH	804	1700	1505
Volume to Capacity	0.06	0.05	0.01
Queue Length 95th (ft)	4	0	1
Control Delay (s)	9.7	0.0	0.5
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	0.5
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
2017 AM Pk Hr

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	210	4022	428	171	1025	422	102	130	100	71	372	282
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	210	4022	428	171	1025	422	102	130	100	71	372	282
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	210	4022	428	171	1025	422	102	130	100	71	372	282
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	210	4022	428	171	1025	422	102	130	100	71	372	282
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	210	4022	428	171	1025	422	102	130	100	71	372	282
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.53	0.24	0.05	0.13	0.24	0.03	0.03	0.06	0.02	0.10	0.16
Crit Moves:		****		****			****					****
Green Time:	16.0	56.7	56.7	7.0	47.7	54.7	7.0	14.3	30.3	10.0	17.3	17.3
Volume/Cap:	0.42	0.93	0.43	0.78	0.28	0.44	0.46	0.24	0.19	0.23	0.57	0.93
Delay/Veh:	38.4	24.4	12.7	61.5	15.8	13.8	46.2	38.3	26.0	41.8	39.1	75.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.4	24.4	12.7	61.5	15.8	13.8	46.2	38.3	26.0	41.8	39.1	75.3
LOS by Move:	D+	C	B	E	B	B	D	D+	C	D	D	E-
DesignQueue:	150	702	299	135	193	308	80	78	107	54	219	367

Note: Queue reported is the distance per lane in feet.

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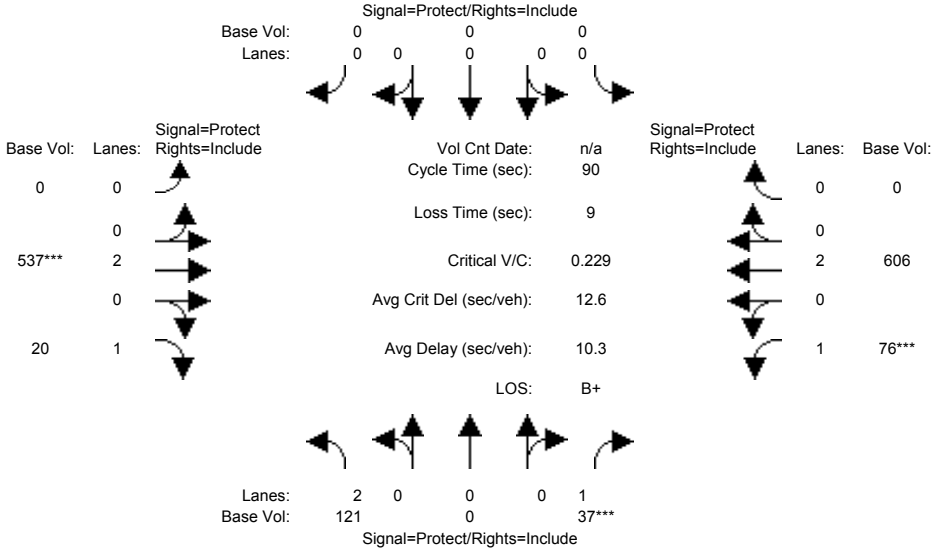
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
2017 AM Pk Hr

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	121	0	37	0	0	0	0	537	20	76	606	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	121	0	37	0	0	0	0	537	20	76	606	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	121	0	37	0	0	0	0	537	20	76	606	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	121	0	37	0	0	0	0	537	20	76	606	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	121	0	37	0	0	0	0	537	20	76	606	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.14	0.01	0.04	0.16	0.00
Crit Moves:			****					****		****		
Green Time:	10.0	0.0	10.0	0.0	0.0	0.0	0.0	54.3	54.3	16.7	71.0	0.0
Volume/Cap:	0.35	0.00	0.19	0.00	0.00	0.00	0.00	0.23	0.02	0.23	0.20	0.00
Delay/Veh:	37.6	0.0	36.8	0.0	0.0	0.0	0.0	8.3	7.2	31.6	2.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.6	0.0	36.8	0.0	0.0	0.0	0.0	8.3	7.2	31.6	2.4	0.0
LOS by Move:	D+	A	D+	A	A	A	A	A	A	C	A	A
DesignQueue:	82	0	45	0	0	0	0	138	11	85	83	0

Note: Queue reported is the distance per lane in feet.

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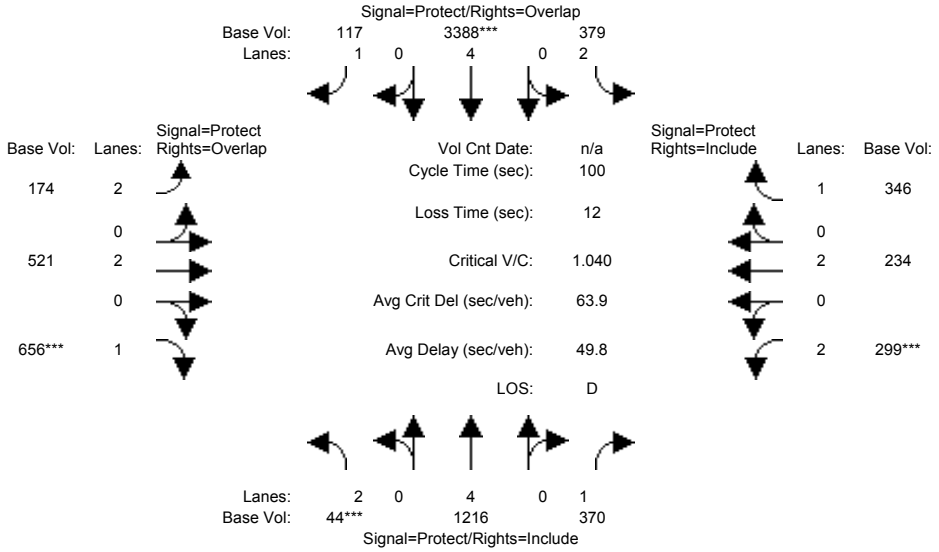
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
2017 PM Pk Hr

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	44	1216	370	379	3388	117	174	521	656	299	234	346
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	44	1216	370	379	3388	117	174	521	656	299	234	346
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	44	1216	370	379	3388	117	174	521	656	299	234	346
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	1216	370	379	3388	117	174	521	656	299	234	346
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	44	1216	370	379	3388	117	174	521	656	299	234	346
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.01	0.16	0.21	0.12	0.45	0.07	0.06	0.14	0.37	0.09	0.06	0.20
Crit Moves:	****				****				****	****		
Green Time:	7.0	31.7	31.7	18.0	42.7	52.7	10.0	29.2	36.2	9.1	28.3	28.3
Volume/Cap:	0.20	0.51	0.67	0.67	1.04	0.13	0.55	0.47	1.04	1.04	0.22	0.70
Delay/Veh:	44.3	28.0	32.7	41.2	57.5	12.0	45.0	29.4	77.1	110.6	27.5	36.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	44.3	28.0	32.7	41.2	57.5	12.0	45.0	29.4	77.1	110.6	27.5	36.5
LOS by Move:	D	C	C-	D	E+	B	D	C	E-	F	C	D+
DesignQueue:	34	301	404	269	764	85	133	266	700	234	118	395

Note: Queue reported is the distance per lane in feet.

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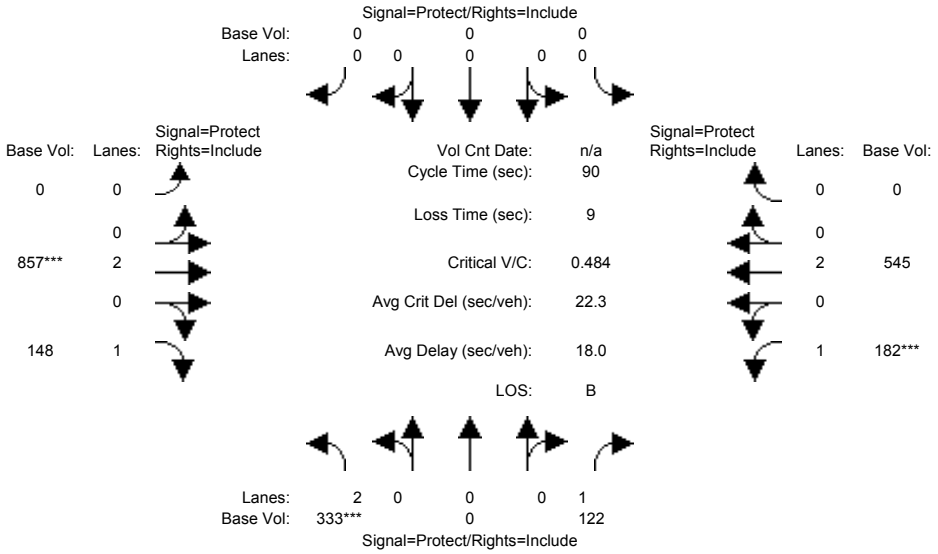
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
2017 PM Pk Hr

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	333	0	122	0	0	0	0	857	148	182	545	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	333	0	122	0	0	0	0	857	148	182	545	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	333	0	122	0	0	0	0	857	148	182	545	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	333	0	122	0	0	0	0	857	148	182	545	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	333	0	122	0	0	0	0	857	148	182	545	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.07	0.00	0.00	0.00	0.00	0.23	0.08	0.10	0.14	0.00
Crit Moves:	****							****		****		
Green Time:	19.7	0.0	19.7	0.0	0.0	0.0	0.0	42.0	42.0	19.4	61.3	0.0
Volume/Cap:	0.48	0.00	0.32	0.00	0.00	0.00	0.00	0.48	0.18	0.48	0.21	0.00
Delay/Veh:	31.3	0.0	30.0	0.0	0.0	0.0	0.0	16.8	14.1	31.9	5.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.3	0.0	30.0	0.0	0.0	0.0	0.0	16.8	14.1	31.9	5.4	0.0
LOS by Move:	C	A	C	A	A	A	A	B	B	C	A	A
DesignQueue:	202	0	132	0	0	0	0	304	110	199	113	0

Note: Queue reported is the distance per lane in feet.

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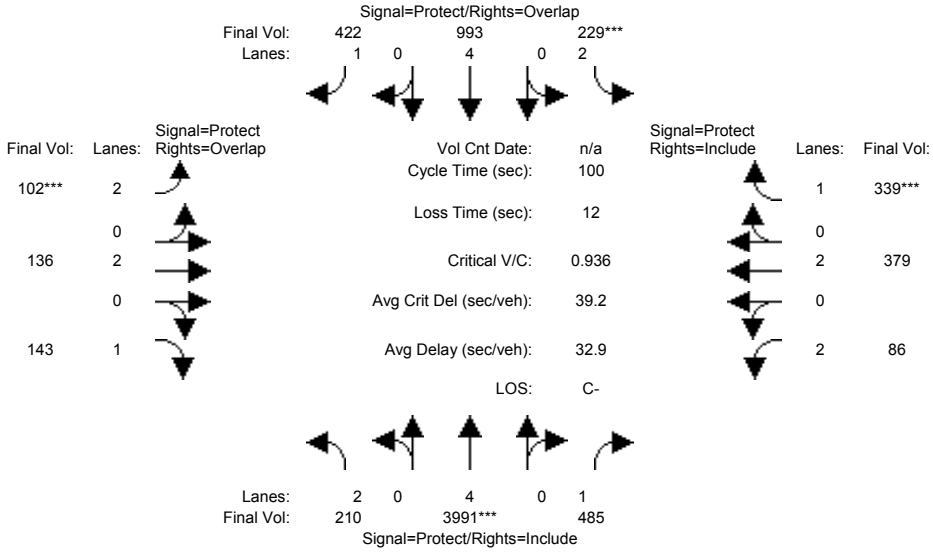
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
2017 AM Pk Hr + Project

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	210	3991	428	171	993	422	102	130	100	71	372	282
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	210	3991	428	171	993	422	102	130	100	71	372	282
Added Vol:	0	0	57	58	0	0	0	6	43	15	7	57
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	210	3991	485	229	993	422	102	136	143	86	379	339
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	210	3991	485	229	993	422	102	136	143	86	379	339
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	210	3991	485	229	993	422	102	136	143	86	379	339
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	210	3991	485	229	993	422	102	136	143	86	379	339
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.07	0.53	0.28	0.07	0.13	0.24	0.03	0.04	0.08	0.03	0.10	0.19
Crit Moves:		****		****			****					****
Green Time:	15.4	53.7	53.7	7.4	45.8	52.8	7.0	15.8	31.1	11.0	19.8	19.8
Volume/Cap:	0.43	0.98	0.52	0.98	0.29	0.46	0.46	0.23	0.26	0.25	0.50	0.98
Delay/Veh:	39.0	32.0	15.3	98.3	16.9	15.0	46.2	37.0	26.1	41.0	36.2	81.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.0	32.0	15.3	98.3	16.9	15.0	46.2	37.0	26.1	41.0	36.2	81.9
LOS by Move:	D	C-	B	F	B	B	D	D+	C	D	D+	F
DesignQueue:	152	744	365	181	193	321	80	80	152	65	217	432

Note: Queue reported is the distance per lane in feet.

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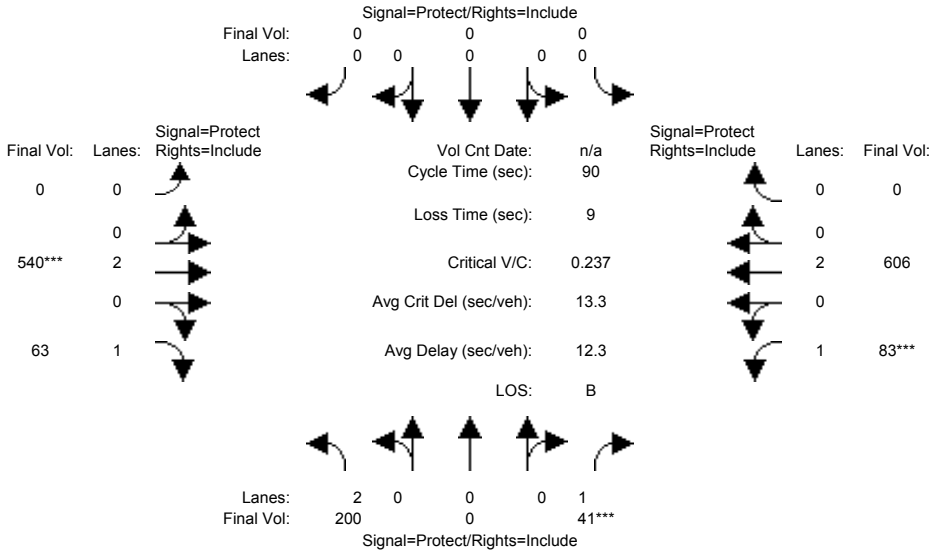
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
2017 AM Pk Hr + Project

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	121	0	37	0	0	0	0	537	20	76	606	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	121	0	37	0	0	0	0	537	20	76	606	0
Added Vol:	79	0	4	0	0	0	0	3	43	7	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	200	0	41	0	0	0	0	540	63	83	606	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	200	0	41	0	0	0	0	540	63	83	606	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	200	0	41	0	0	0	0	540	63	83	606	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	200	0	41	0	0	0	0	540	63	83	606	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.14	0.04	0.05	0.16	0.00
Crit Moves:			****					****		****		
Green Time:	10.0	0.0	10.0	0.0	0.0	0.0	0.0	53.2	53.2	17.8	71.0	0.0
Volume/Cap:	0.57	0.00	0.21	0.00	0.00	0.00	0.00	0.24	0.06	0.24	0.20	0.00
Delay/Veh:	40.2	0.0	37.0	0.0	0.0	0.0	0.0	8.8	7.8	30.8	2.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	40.2	0.0	37.0	0.0	0.0	0.0	0.0	8.8	7.8	30.8	2.4	0.0
LOS by Move:	D	A	D+	A	A	A	A	A	A	C	A	A
DesignQueue:	136	0	50	0	0	0	0	143	35	92	83	0

Note: Queue reported is the distance per lane in feet.

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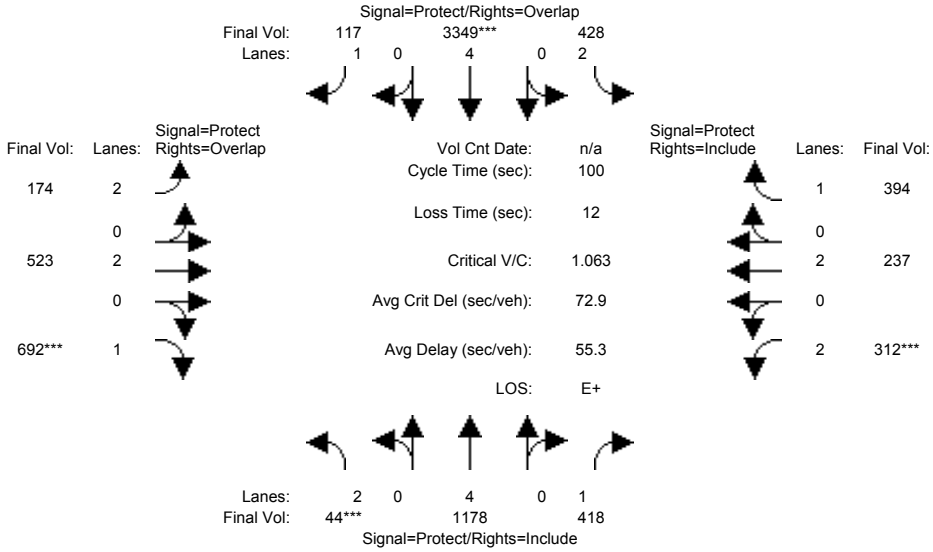
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
2017 PM Pk Hr + Project

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	44	1178	370	379	3349	117	174	521	656	299	234	346
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	44	1178	370	379	3349	117	174	521	656	299	234	346
Added Vol:	0	0	48	49	0	0	0	2	36	13	3	48
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	44	1178	418	428	3349	117	174	523	692	312	237	394
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	44	1178	418	428	3349	117	174	523	692	312	237	394
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	1178	418	428	3349	117	174	523	692	312	237	394
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	44	1178	418	428	3349	117	174	523	692	312	237	394
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.01	0.16	0.24	0.14	0.44	0.07	0.06	0.14	0.40	0.10	0.06	0.23
Crit Moves:	****				****				****	****		
Green Time:	7.0	30.8	30.8	17.5	41.3	50.7	9.4	30.5	37.5	9.3	30.3	30.3
Volume/Cap:	0.20	0.50	0.78	0.78	1.07	0.13	0.59	0.45	1.06	1.07	0.21	0.74
Delay/Veh:	44.3	28.5	38.5	46.3	67.3	13.1	46.4	28.3	81.9	117.2	26.0	36.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	44.3	28.5	38.5	46.3	67.3	13.1	46.4	28.3	81.9	117.2	26.0	36.9
LOS by Move:	D	C	D+	D	E	B	D	C	F	F	C	D+
DesignQueue:	34	295	466	307	773	89	134	262	729	244	117	440

Note: Queue reported is the distance per lane in feet.

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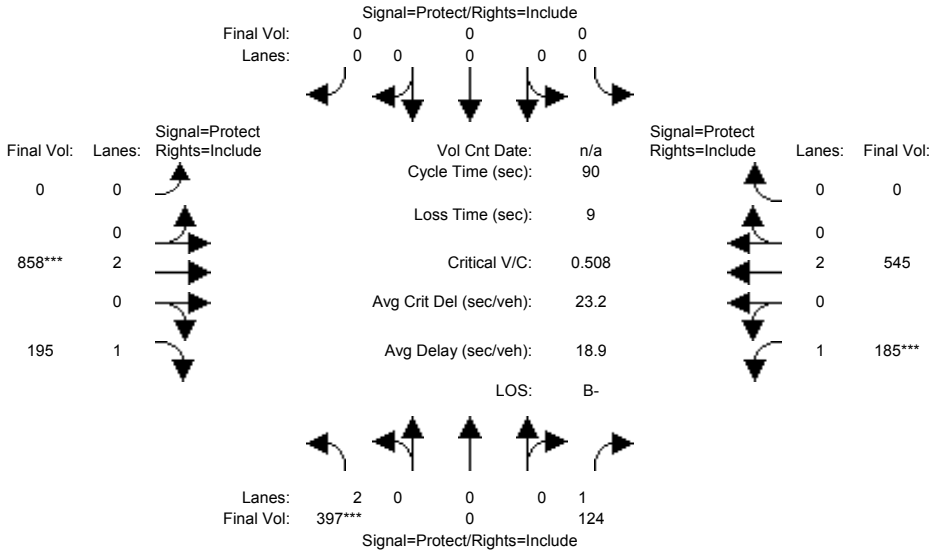
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
2017 PM Pk Hr + Project

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	333	0	122	0	0	0	0	857	148	182	545	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	333	0	122	0	0	0	0	857	148	182	545	0
Added Vol:	64	0	2	0	0	0	0	1	47	3	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	397	0	124	0	0	0	0	858	195	185	545	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	397	0	124	0	0	0	0	858	195	185	545	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	397	0	124	0	0	0	0	858	195	185	545	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	397	0	124	0	0	0	0	858	195	185	545	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.13	0.00	0.07	0.00	0.00	0.00	0.00	0.23	0.11	0.11	0.14	0.00
Crit Moves:	****							****		****		
Green Time:	22.3	0.0	22.3	0.0	0.0	0.0	0.0	40.0	40.0	18.7	58.7	0.0
Volume/Cap:	0.51	0.00	0.29	0.00	0.00	0.00	0.00	0.51	0.25	0.51	0.22	0.00
Delay/Veh:	29.7	0.0	27.8	0.0	0.0	0.0	0.0	18.2	15.8	32.8	6.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.7	0.0	27.8	0.0	0.0	0.0	0.0	18.2	15.8	32.8	6.4	0.0
LOS by Move:	C	A	C	A	A	A	A	B-	B	C-	A	A
DesignQueue:	233	0	129	0	0	0	0	317	152	205	123	0

Note: Queue reported is the distance per lane in feet.

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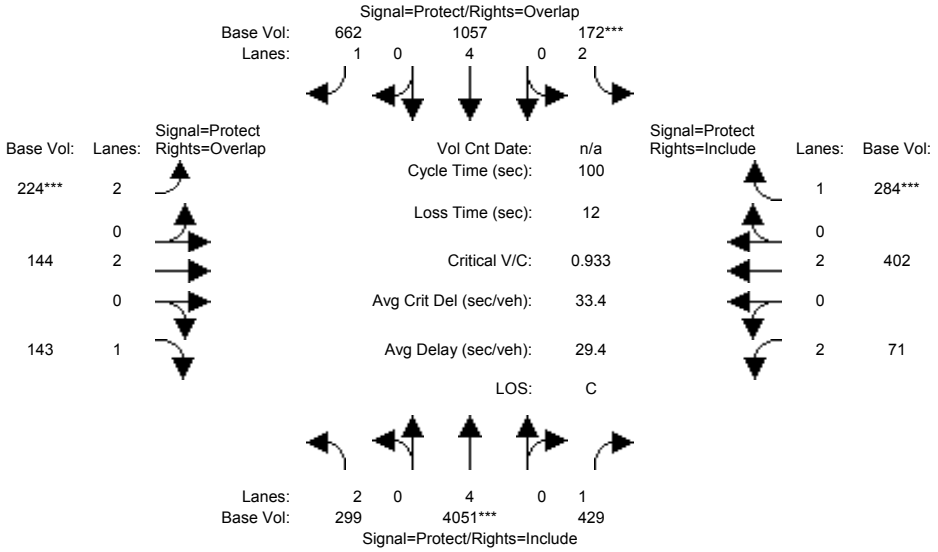
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM Pk Hr

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	299	4051	429	172	1057	662	224	144	143	71	402	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	299	4051	429	172	1057	662	224	144	143	71	402	284
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	299	4051	429	172	1057	662	224	144	143	71	402	284
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	299	4051	429	172	1057	662	224	144	143	71	402	284
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	299	4051	429	172	1057	662	224	144	143	71	402	284
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.53	0.25	0.05	0.14	0.38	0.07	0.04	0.08	0.02	0.11	0.16
Crit Moves:		****		****			****					****
Green Time:	15.0	56.3	56.3	7.0	48.4	55.9	7.5	14.5	29.5	10.2	17.2	17.2
Volume/Cap:	0.63	0.95	0.44	0.78	0.29	0.68	0.95	0.26	0.28	0.22	0.62	0.95
Delay/Veh:	42.8	25.9	12.9	62.0	15.5	17.6	89.7	38.2	27.4	41.6	40.2	78.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.8	25.9	12.9	62.0	15.5	17.6	89.7	38.2	27.4	41.6	40.2	78.7
LOS by Move:	D	C	B	E	B	B	F	D+	C	D	D	E-
DesignQueue:	219	715	302	136	197	489	177	86	155	54	238	371

Note: Queue reported is the distance per lane in feet.

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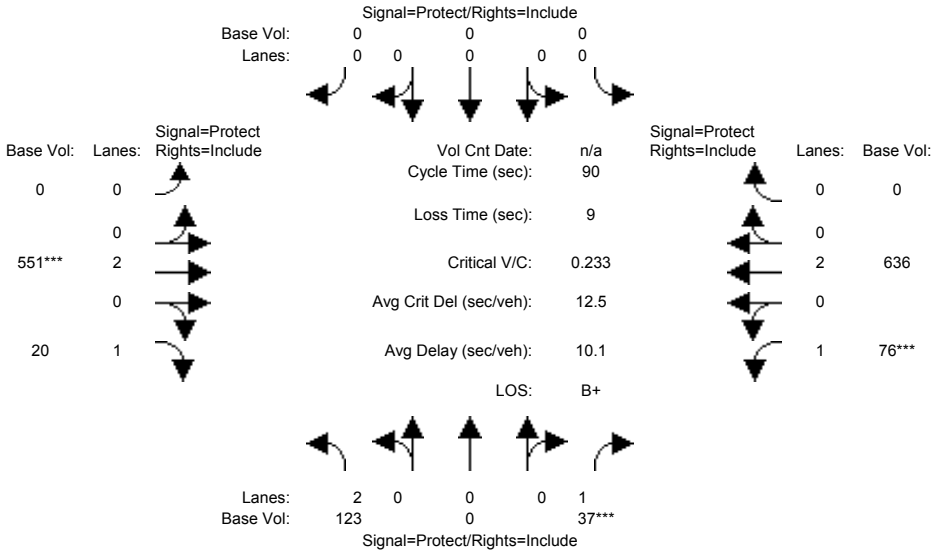
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background AM Pk Hr

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	123	0	37	0	0	0	0	551	20	76	636	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	123	0	37	0	0	0	0	551	20	76	636	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	123	0	37	0	0	0	0	551	20	76	636	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	123	0	37	0	0	0	0	551	20	76	636	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	123	0	37	0	0	0	0	551	20	76	636	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.04	0.00	0.02	0.00	0.00	0.00	0.00	0.15	0.01	0.04	0.17	0.00
Crit Moves:			****					****		****		
Green Time:	10.0	0.0	10.0	0.0	0.0	0.0	0.0	54.6	54.6	16.4	71.0	0.0
Volume/Cap:	0.35	0.00	0.19	0.00	0.00	0.00	0.00	0.24	0.02	0.24	0.21	0.00
Delay/Veh:	37.6	0.0	36.8	0.0	0.0	0.0	0.0	8.2	7.0	31.9	2.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.6	0.0	36.8	0.0	0.0	0.0	0.0	8.2	7.0	31.9	2.4	0.0
LOS by Move:	D+	A	D+	A	A	A	A	A	A	C	A	A
DesignQueue:	83	0	45	0	0	0	0	141	11	85	88	0

Note: Queue reported is the distance per lane in feet.

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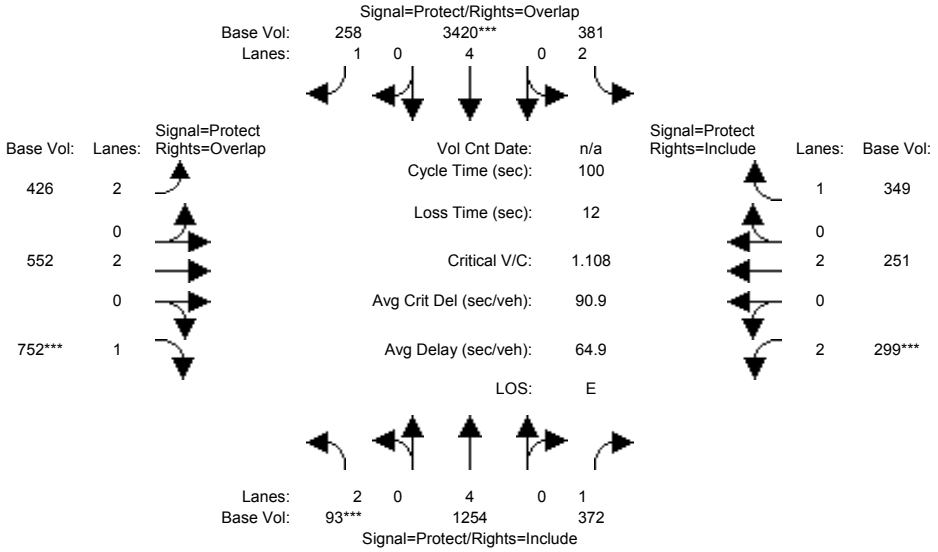
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background PM Pk Hr

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	93	1254	372	381	3420	258	426	552	752	299	251	349
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	1254	372	381	3420	258	426	552	752	299	251	349
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	93	1254	372	381	3420	258	426	552	752	299	251	349
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	1254	372	381	3420	258	426	552	752	299	251	349
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	1254	372	381	3420	258	426	552	752	299	251	349
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.03	0.17	0.21	0.12	0.45	0.15	0.14	0.15	0.43	0.09	0.07	0.20
Crit Moves:	****				****				****	****		
Green Time:	7.0	30.1	30.1	17.2	40.3	56.7	16.4	32.2	39.2	8.5	24.3	24.3
Volume/Cap:	0.42	0.55	0.71	0.71	1.12	0.26	0.82	0.45	1.10	1.12	0.27	0.82
Delay/Veh:	45.9	29.5	35.3	43.3	87.5	11.1	50.6	27.1	93.9	135.8	30.9	48.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.9	29.5	35.3	43.3	87.5	11.1	50.6	27.1	93.9	135.8	30.9	48.0
LOS by Move:	D	C	D+	D	F	B+	D	C	F	F	C	D
DesignQueue:	73	318	415	273	805	175	309	270	778	235	134	421

Note: Queue reported is the distance per lane in feet.

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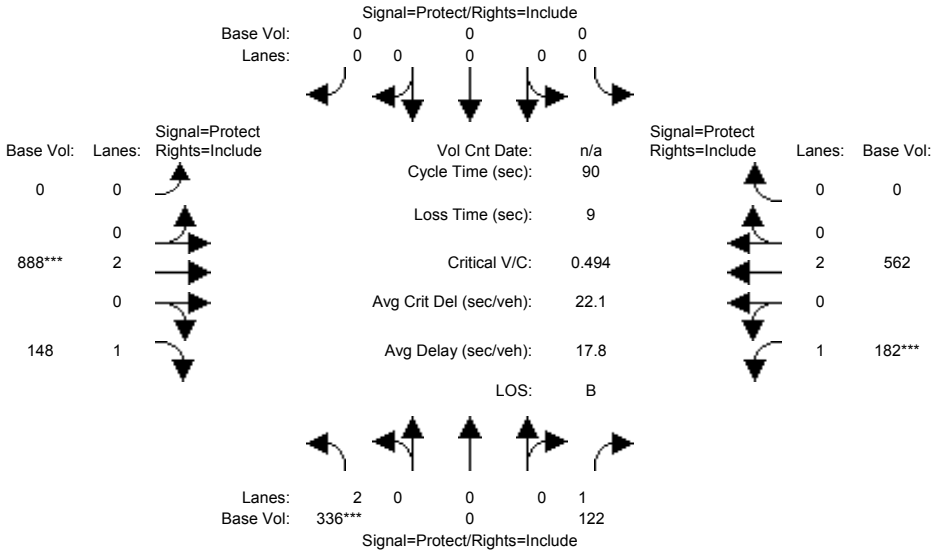
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Base Volume Alternative)
Background PM Pk Hr

Intersection #4: Kifer Rd / Costco Entrance




```
Street Name:         Costco Entrance                        Kifer Rd
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Min. Green:     7    0    10     0    0     0     0   10    10     7   10    10
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     336    0   122     0    0     0     0  888   148   182  562     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  336    0   122     0    0     0     0  888   148   182  562     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Volume:   336    0   122     0    0     0     0  888   148   182  562     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  336    0   122     0    0     0     0  888   148   182  562     0
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  336    0   122     0    0     0     0  888   148   182  562     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.83 1.00  0.92  0.92 1.00  0.92  0.92 1.00  0.92  0.92 1.00  0.92
Lanes:       2.00 0.00  1.00  0.00 0.00  0.00  0.00 2.00  1.00  1.00 2.00  0.00
Final Sat.:  3150    0  1750     0    0     0     0 3800  1750  1750 3800     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.11 0.00  0.07  0.00 0.00  0.00  0.00 0.23  0.08  0.10 0.15  0.00
Crit Moves:  ****                                   ****        ****
Green Time:  19.4  0.0  19.4   0.0  0.0   0.0   0.0 42.6  42.6  19.0 61.6   0.0
Volume/Cap:  0.49 0.00  0.32  0.00 0.00  0.00  0.00 0.49  0.18  0.49 0.22  0.00
Delay/Veh:   31.5  0.0  30.2   0.0  0.0   0.0   0.0 16.5  13.7  32.3  5.3   0.0
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  31.5  0.0  30.2   0.0  0.0   0.0   0.0 16.5  13.7  32.3  5.3   0.0
LOS by Move:    C    A     C     A    A     A     A    B     B    C-    A     A
DesignQueue:  204    0   132     0    0     0     0  312   108   200  116     0
Note: Queue reported is the distance per lane in feet.
```

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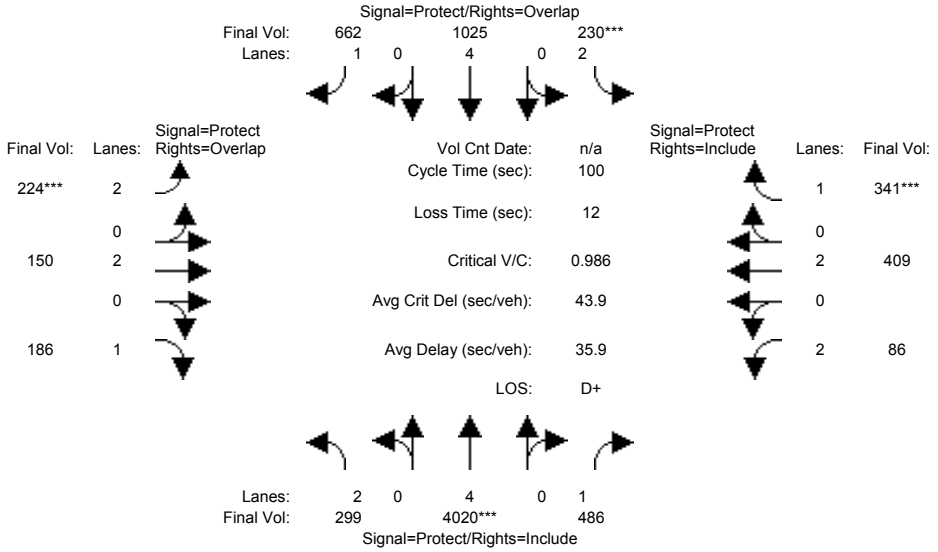
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM Pk Hr + Project

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	299	4020	429	172	1025	662	224	144	143	71	402	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	299	4020	429	172	1025	662	224	144	143	71	402	284
Added Vol:	0	0	57	58	0	0	0	6	43	15	7	57
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	299	4020	486	230	1025	662	224	150	186	86	409	341
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	299	4020	486	230	1025	662	224	150	186	86	409	341
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	299	4020	486	230	1025	662	224	150	186	86	409	341
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	299	4020	486	230	1025	662	224	150	186	86	409	341
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.09	0.53	0.28	0.07	0.13	0.38	0.07	0.04	0.11	0.03	0.11	0.19
Crit Moves:		****		****			****					****
Green Time:	14.4	53.6	53.6	7.4	46.6	53.8	7.2	15.9	30.3	11.1	19.8	19.8
Volume/Cap:	0.66	0.99	0.52	0.99	0.29	0.70	0.99	0.25	0.35	0.25	0.54	0.99
Delay/Veh:	44.0	33.9	15.4	101.1	16.5	19.6	102.0	37.1	27.6	41.0	36.9	84.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	44.0	33.9	15.4	101.1	16.5	19.6	102.0	37.1	27.6	41.0	36.9	84.5
LOS by Move:	D	C-	B	F	B	B-	F	D+	C	D	D+	F
DesignQueue:	220	752	367	182	197	512	177	89	201	65	235	435

Note: Queue reported is the distance per lane in feet.

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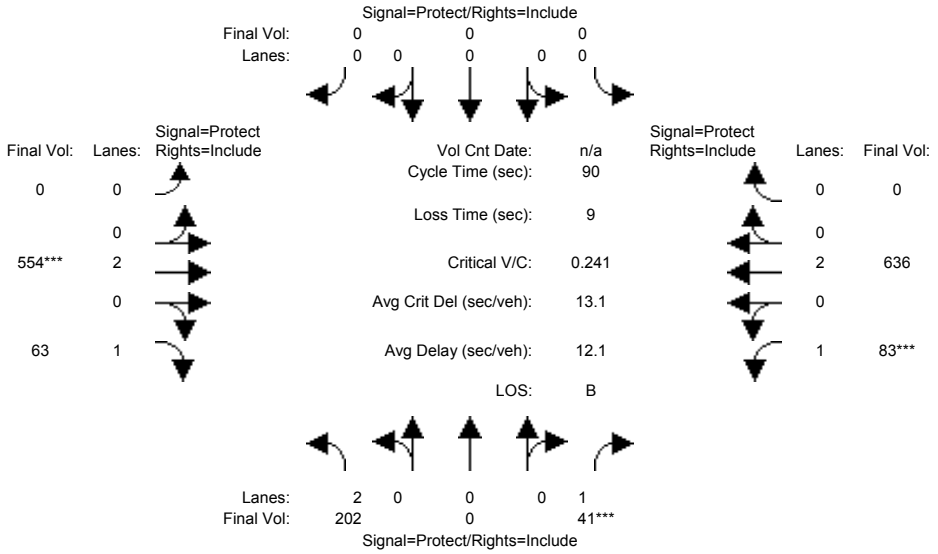
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background AM Pk Hr + Project

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	123	0	37	0	0	0	0	551	20	76	636	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	123	0	37	0	0	0	0	551	20	76	636	0
Added Vol:	79	0	4	0	0	0	0	3	43	7	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	202	0	41	0	0	0	0	554	63	83	636	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	202	0	41	0	0	0	0	554	63	83	636	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	202	0	41	0	0	0	0	554	63	83	636	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	202	0	41	0	0	0	0	554	63	83	636	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.02	0.00	0.00	0.00	0.00	0.15	0.04	0.05	0.17	0.00
Crit Moves:			****					****		****		
Green Time:	10.0	0.0	10.0	0.0	0.0	0.0	0.0	53.6	53.6	17.4	71.0	0.0
Volume/Cap:	0.58	0.00	0.21	0.00	0.00	0.00	0.00	0.24	0.06	0.24	0.21	0.00
Delay/Veh:	40.4	0.0	37.0	0.0	0.0	0.0	0.0	8.7	7.7	31.1	2.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	40.4	0.0	37.0	0.0	0.0	0.0	0.0	8.7	7.7	31.1	2.4	0.0
LOS by Move:	D	A	D+	A	A	A	A	A	A	C	A	A
DesignQueue:	138	0	50	0	0	0	0	146	35	92	88	0

Note: Queue reported is the distance per lane in feet.

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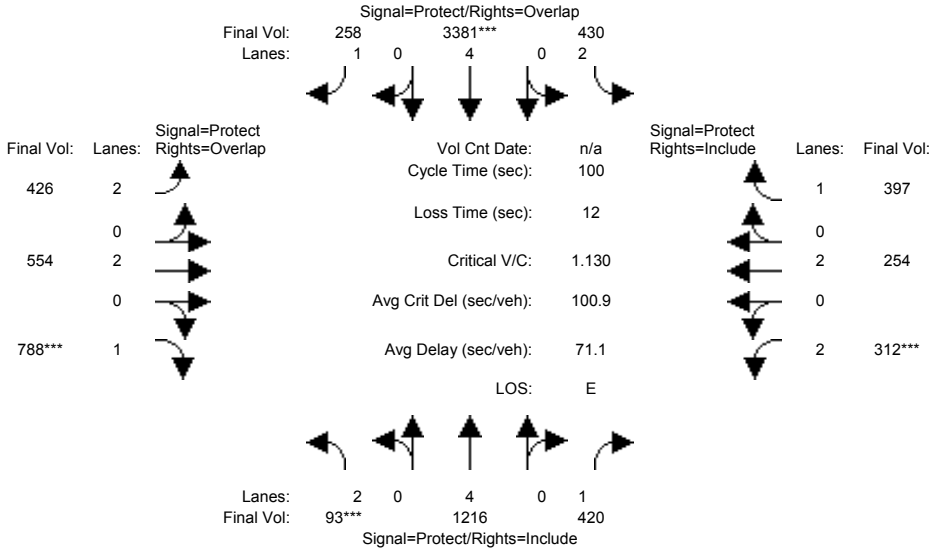
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM Pk Hr + Project

Intersection #2: Kifer Rd / Lawrence Expy



Street Name:	Lawrence Expy						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	93	1216	372	381	3381	258	426	552	752	299	251	349
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	93	1216	372	381	3381	258	426	552	752	299	251	349
Added Vol:	0	0	48	49	0	0	0	2	36	13	3	48
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	93	1216	420	430	3381	258	426	554	788	312	254	397
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	93	1216	420	430	3381	258	426	554	788	312	254	397
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	1216	420	430	3381	258	426	554	788	312	254	397
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	93	1216	420	430	3381	258	426	554	788	312	254	397
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92	0.83	1.00	0.92
Lanes:	2.00	4.00	1.00	2.00	4.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3150	7600	1750	3150	7600	1750	3150	3800	1750	3150	3800	1750
Capacity Analysis Module:												
Vol/Sat:	0.03	0.16	0.24	0.14	0.44	0.15	0.14	0.15	0.45	0.10	0.07	0.23
Crit Moves:	****				****				****	****		
Green Time:	7.0	29.3	29.3	16.7	39.0	54.7	15.7	33.3	40.3	8.7	26.3	26.3
Volume/Cap:	0.42	0.55	0.82	0.82	1.14	0.27	0.86	0.44	1.12	1.14	0.25	0.86
Delay/Veh:	45.9	30.0	42.9	50.0	98.5	12.2	55.5	26.3	100.4	143.6	29.2	50.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.9	30.0	42.9	50.0	98.5	12.2	55.5	26.3	100.4	143.6	29.2	50.4
LOS by Move:	D	C	D	D	F	B	E+	C	F	F	C	D
DesignQueue:	73	312	478	311	812	183	312	267	805	245	132	469

Note: Queue reported is the distance per lane in feet.

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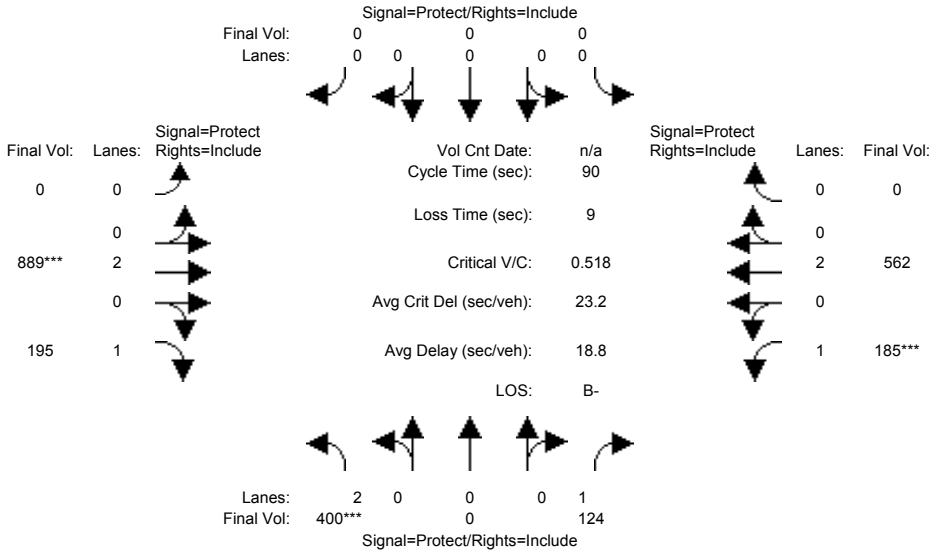
150 Lawrence Station Rd TOA
Sunnyvale, CA
8642.002

Level Of Service Computation Report
2000 HCM Operations (Future Volume Alternative)
Background PM Pk Hr + Project

Intersection #4: Kifer Rd / Costco Entrance



Street Name:	Costco Entrance						Kifer Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Min. Green:	7	0	10	0	0	0	0	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	336	0	122	0	0	0	0	888	148	182	562	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	336	0	122	0	0	0	0	888	148	182	562	0
Added Vol:	64	0	2	0	0	0	0	1	47	3	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	400	0	124	0	0	0	0	889	195	185	562	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	400	0	124	0	0	0	0	889	195	185	562	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	400	0	124	0	0	0	0	889	195	185	562	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	400	0	124	0	0	0	0	889	195	185	562	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92	0.92	1.00	0.92
Lanes:	2.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	3150	0	1750	0	0	0	0	3800	1750	1750	3800	0
Capacity Analysis Module:												
Vol/Sat:	0.13	0.00	0.07	0.00	0.00	0.00	0.00	0.23	0.11	0.11	0.15	0.00
Crit Moves:	****							****		****		
Green Time:	22.0	0.0	22.0	0.0	0.0	0.0	0.0	40.6	40.6	18.3	59.0	0.0
Volume/Cap:	0.52	0.00	0.29	0.00	0.00	0.00	0.00	0.52	0.25	0.52	0.23	0.00
Delay/Veh:	30.0	0.0	28.0	0.0	0.0	0.0	0.0	18.0	15.4	33.2	6.3	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.0	0.0	28.0	0.0	0.0	0.0	0.0	18.0	15.4	33.2	6.3	0.0
LOS by Move:	C	A	C	A	A	A	A	B	B	C-	A	A
DesignQueue:	236	0	129	0	0	0	0	325	150	206	126	0

Note: Queue reported is the distance per lane in feet.

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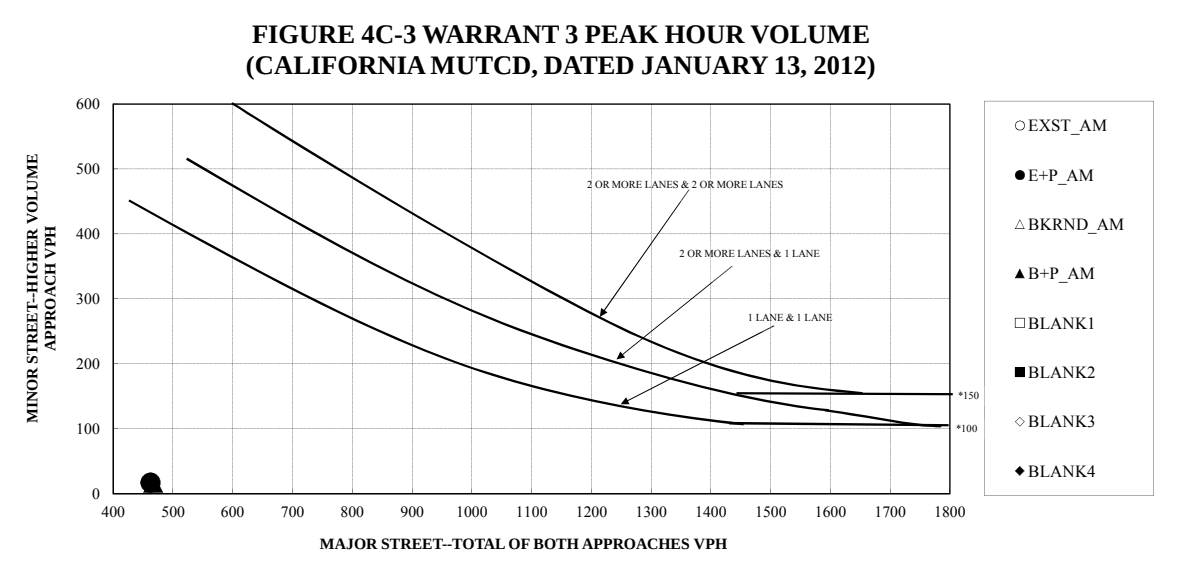
Appendix B
CA-MUTCD Signal Warrant-3 Worksheets

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	382	17	NO
E+P_AM	463	17	NO
BKRND_AM	386	17	NO
B+P_AM	467	17	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **5**

Intersection: **North Costco Driveway & Lawrence Station Road**

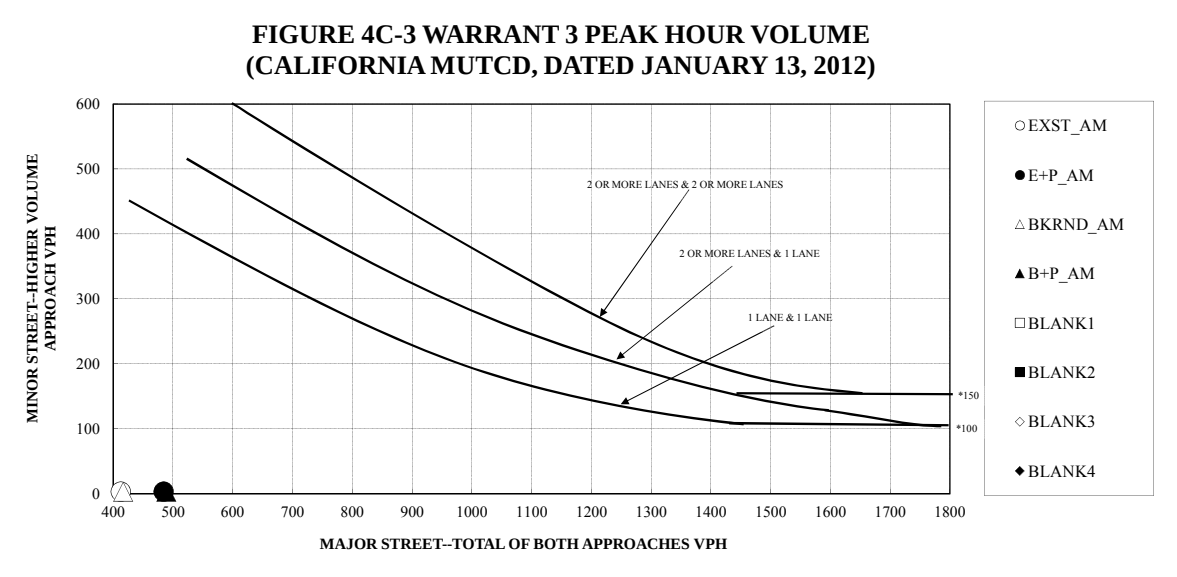
Number of lanes on MAJOR street: **2**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	413	3	NO
E+P_AM	485	3	NO
BKRND_AM	417	3	NO
B+P_AM	489	3	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **6**

Intersection: **Central Costco Driveway Lawrence Station Road**

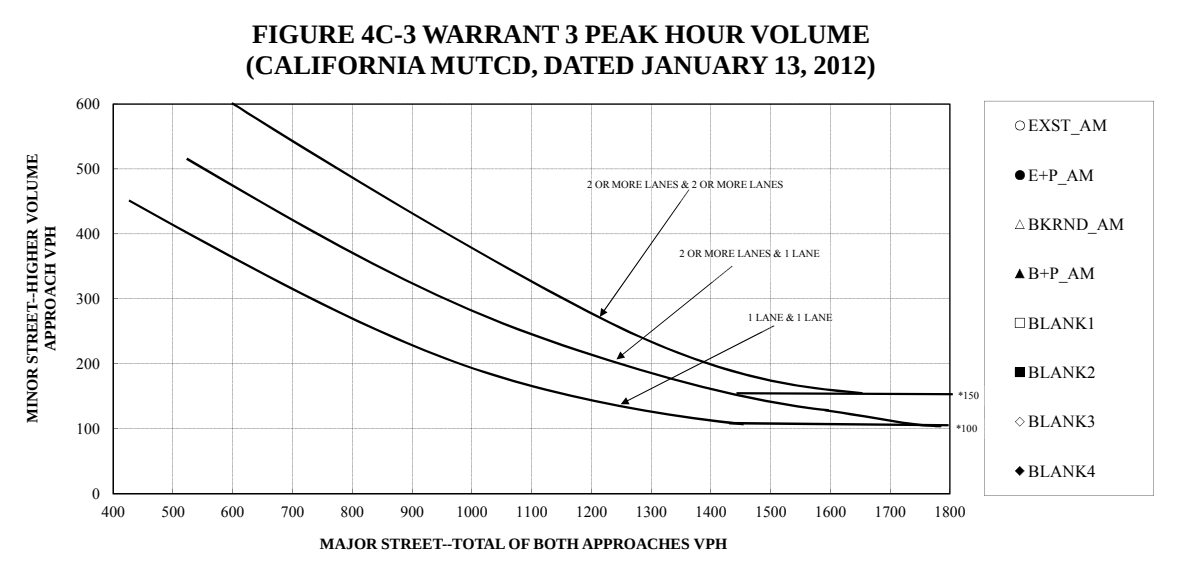
Number of lanes on MAJOR street: **2**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	138	71	NO
E+P_AM	184	71	NO
BKRND_AM	138	73	NO
B+P_AM	184	73	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **7**

Intersection: **South Costco Driveway & Lawrence Station Road**

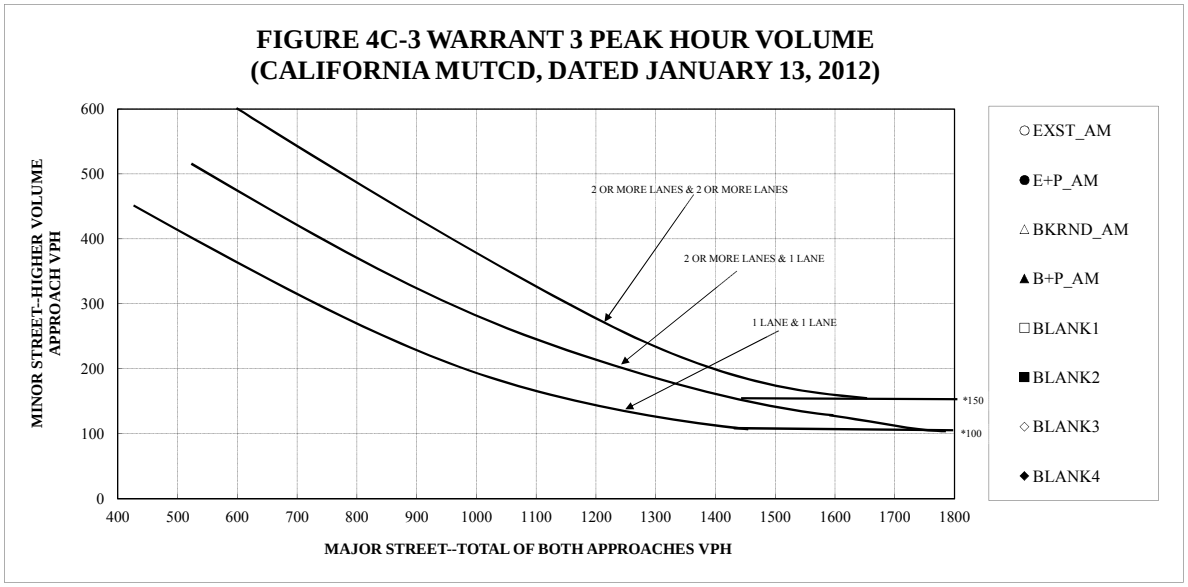
Number of lanes on MAJOR street: **1**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "AM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_AM	186	28	NO
E+P_AM	230	28	NO
BKRND_AM	188	32	NO
B+P_AM	232	32	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **8**

Intersection: **Caltrain Driveway & Lawrence Station Rd**

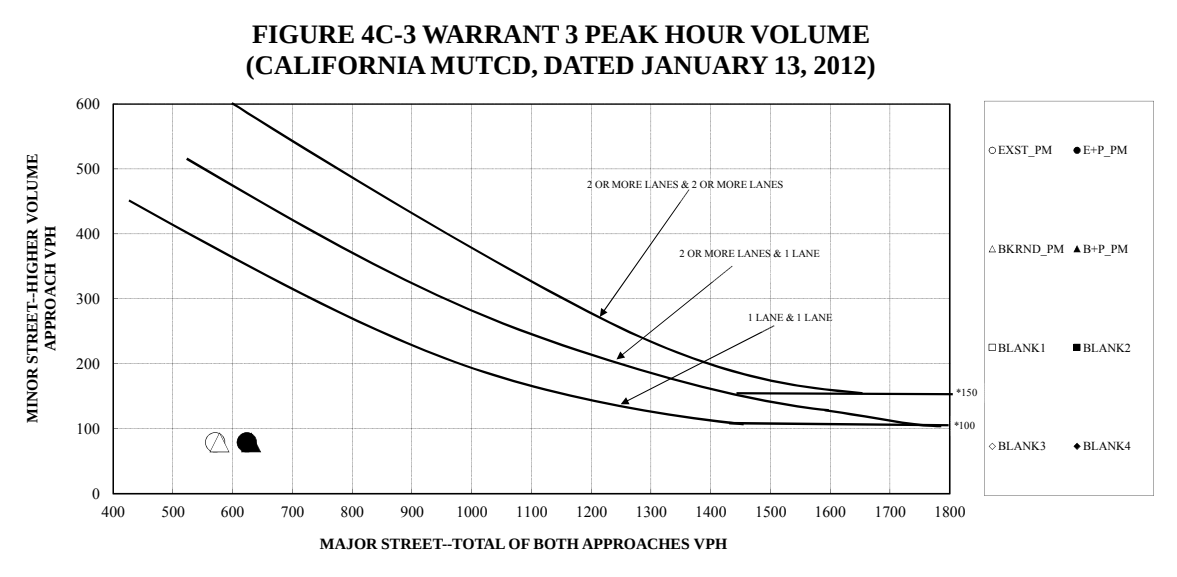
Number of lanes on MAJOR street: **1**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	571	79	NO
E+P_PM	624	79	NO
BKRND_PM	578	79	NO
B+P_PM	631	79	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **5**

Intersection: **North Costco Driveway & Lawrence Station Road**

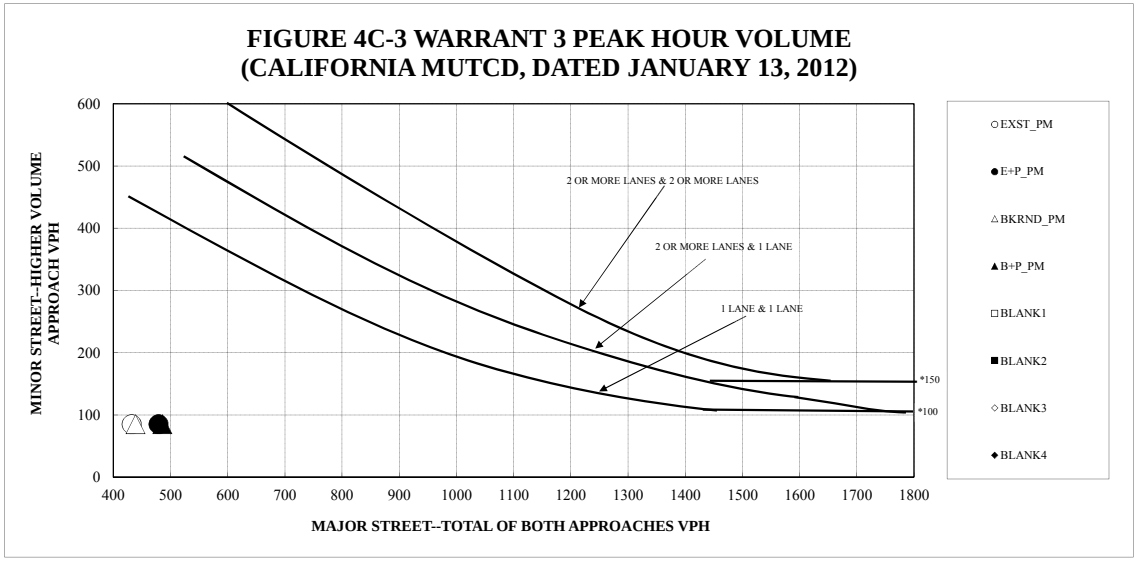
Number of lanes on MAJOR street: **2**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	432	85	NO
E+P_PM	479	85	NO
BKRND_PM	439	85	NO
B+P_PM	486	85	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **6**

Intersection: **Central Costco Driveway Lawrence Station Road**

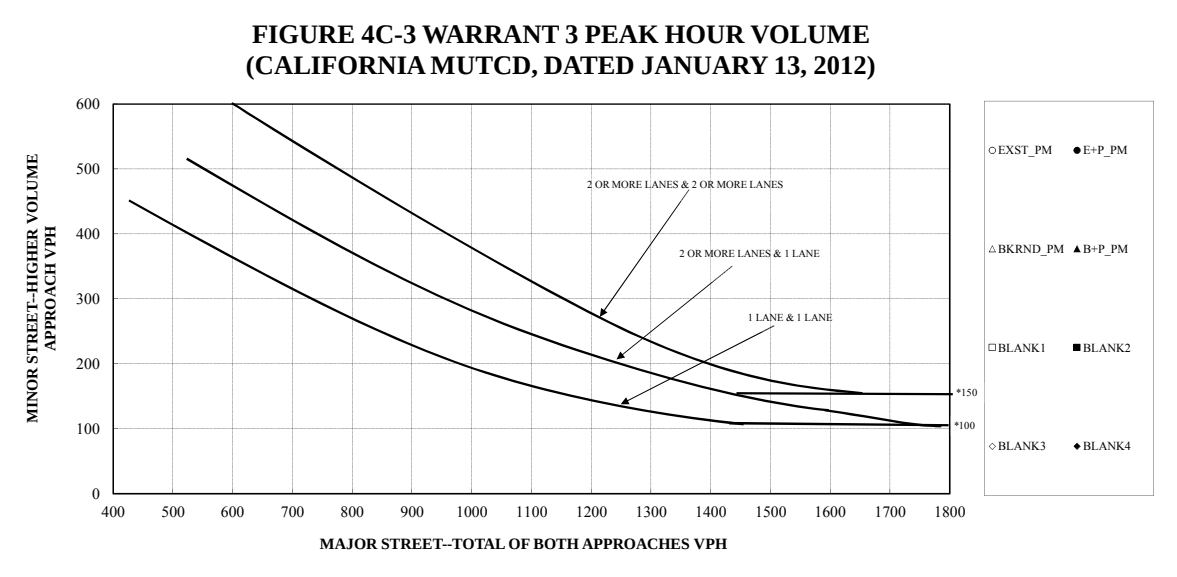
Number of lanes on MAJOR street: **2**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	253	165	NO
E+P_PM	254	202	NO
BKRND_PM	260	165	NO
B+P_PM	261	202	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **7**

Intersection: **South Costco Driveway & Lawrence Station Road**

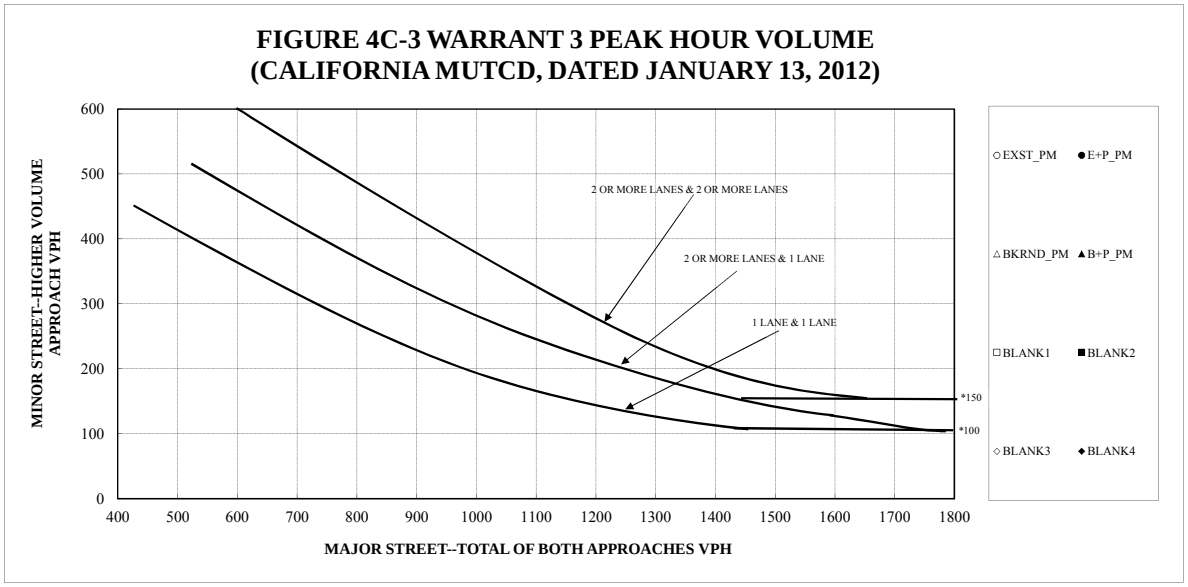
Number of lanes on MAJOR street: **1**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

CA SIGNAL WARRANT 3 ANALYSIS

SCENARIOS: "PM PEAK HOUR" CONDITIONS



*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.

SCENARIO	APPROACH(ES)		WARRANT MET?
	MAJOR	MINOR	
EXST_PM	332	37	NO
E+P_PM	369	37	NO
BKRND_PM	336	43	NO
B+P_PM	373	43	NO
BLANK1	0	0	
BLANK2	0	0	
BLANK3	0	0	
BLANK4	0	0	

Note: Major approach is the total of both approaches. Minor approach is the highest of both approaches.

Date: **September 7, 2017** Intersection No.: **8**

Intersection: **Caltrain Driveway & Lawrence Station Rd**

Number of lanes on MAJOR street: **1**

Number of lanes on MINOR street: **1**

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Appendix C
List of Approved Background Projects

150 Lawrence Station Road TOA
Appendix C: Approved Projects Within One-Mile Radius (For Background Conditions Analysis)

No.	Project	Existing Land Uses	Proposed Land Uses	Status	Planning Notes	General Notes
1	1080 Stewart Drive	248 Room Hotel	357 Room Hotel (net 109 rooms increase)	Approved		
2	1050 Kifer Road	142,463 sqft Office/R&D [already demolished]	755,144 sqft Office/R&D	Approved		30% trip reduction - LSAP
3	106 Lawrence Station Road	103,475 sqft Self Storage	138,049 sqft Self Storage (34,571 net increase)	Comments Provided [Approved]	Approved at ZA hearing on 4/12/17	
4	1120 Kifer Road (Greystar)	100,800 (7.99 ac.) Industrial	7,400 sqft Retail, 520 Apartments (Greystar)	Approved		5% trip reduction - LSAP
5	1250 Lakeside Drive	Vacant	263 Room Hotel, 3,000 sqft Restaurant, 250 Apartments	Approved		2% trip reduction - VTA major bus stop
6	701-729 E. Evelyn Avenue	155,600 sqft R&D, 4,000 sqft Industrial, 9,600 sqft Warehouse [already demolished]	204 Townhomes	Approved		2% trip reduction - VTA major bus stop
7	1122 Aster Avenue	24,948 Industrial (1.66 ac.)	34 Condos	Approved		Assume No Net New Trips
8	900 Henderson Avenue	112 Mobile Homes	112 Condos	Comments Provided [Approved]	Approved by Planning Comission on 4/24/17	Assume No Net New Trips
9	954 Henerson Avenue	166 Mobile Homes	166 Condos	Comments Provided [Approved]	Approved by Planning Comission on 4/24/17	Assume No Net New Trips

Appendix D
Approved Background Projects Trip Generation

Appendix D: Approved Background Projects Trip Generation

Table 1 - 1080 Stewart Drive
Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
Hotel	ITE	310	Occ. Rooms	8.92	0.70	58%	42%	0.70	49%	51%

Notes: 1. Occ. Rooms = Occupied Rooms

Table 2 - 1080 Stewart Drive
Trip Generation Volumes

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Hotel	Occ. Rooms	357	3,184	249	144	105	250	123	127
Existing Hotel	Occ. Rooms	248	-2,212	-173	-100	-73	-174	-85	-89
Project Trip Generation			***972***	***76***	***44***	***32***	***76***	***38***	***38***

Notes: 1. Occ. Rooms = Occupied Rooms

Appendix D: Approved Background Projects Trip Generation

Table 1 - 1050 Kifer Road
Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
General Office Building	ITE	710	ksf	8.08	1.28	88%	12%	1.22	17%	83%

Notes: 1. ksf - 1000 sqft Floor Area

Table 2 - 1050 Kifer Road
Trip Generation Volumes

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
General Office Building	ksf	755.144	6,102	964	848	116	924	157	767
LSAP Reduction (New R&D) - 30%		0.300	-1,831	-289	-254	-35	-277	-47	-230
Project Trip Generation			***4,271***	***675***	***594***	***81***	***647***	***110***	***537***

Notes: 1. ksf - 1000 sqft Floor Area

Appendix D: Approved Background Projects Trip Generation

Table 1 - 106 Lawrence Station Road
Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
Mini-Warehouse	ITE	151	ksf	2.50	0.14	55%	45%	0.26	50%	50%

Notes: 1. ksf - 1000 sqft Floor Area

Table 2 - 106 Lawrence Station Road
Trip Generation Volumes

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Mini-Warehouse	ksf	138.049	345	19	10	9	36	18	18
Existing Mini-Warehouse	ksf	103.475	-259	-14	-8	-6	-27	-14	-13
Project Trip Generation			***86***	***5***	***2***	***3***	***9***	***4***	***5***

Notes: 1. ksf - 1000 sqft Floor Area

Appendix D: Approved Background Projects Trip Generation

Table 1 - 1120 Kifer Road
Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
Apartment	ITE	220	DU	6.30	0.50	20%	80%	0.58	65%	35%
Shopping Center	ITE	820	ksf	168.92	4.32	62%	38%	14.19	48%	52%
Industrial Park	ITE	130	Acres	-112.89	-10.64	83%	17%	-11.89	21%	79%

Notes: 1. DU = Dwelling Unit, ksf - 1000 sqft Floor Area

Table 2 - 1120 Kifer Road
Trip Generation Volumes

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Apartment	DU	520	3,275	259	52	207	304	198	106
Shopping Center	ksf	7.4	1,250	32	20	12	105	50	55
Existing Industrial Park	Acres	7.99	-902	-85	-71	-14	-95	-20	-75
LSAP Reduction (New Residential') - 5%		0.05	-226	-15	-	-11	-20	-12	-8
Project Trip Generation			***3,397***	***191***	***1***	***194***	***294***	***216***	***78***

Notes: 1. DU = Dwelling Unit, ksf - 1000 sqft Floor Area

Appendix D: Approved Background Projects Trip Generation

Table 1 - 1250 Lakeside Drive
Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
Apartment	ITE	220	DU	6.56	0.50	20%	80%	0.62	65%	35%
Hotel	ITE	310	Occ. Rooms	8.92	0.67	58%	42%	0.70	49%	51%
Quality Restaurant	ITE	931	ksf	89.95	0.81	50%	50%	7.49	67%	33%

Notes: 1. DU = Dwelling Unit, ksf - 1000 sqft Floor Area, Occ. Rooms = Occupied Rooms

Table 2 - 1250 Lakeside Drive
Trip Generation Volumes

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Apartment	DU	250	1,639	126	25	101	155	101	54
Hotel	Occ. Rooms	263	2,346	175	102	73	184	90	94
Quality Restaurant	ksf	3.00	270	2	1	1	22	15	7
VTA Reduction (Major Bus Stop) - 2%		2%	-33	-3	-1	-2	-3	-2	-1
Project Trip Generation			***4,222***	***300***	***127***	***173***	***358***	***204***	***154***

Notes: 1. DU = Dwelling Unit, ksf - 1000 sqft Floor Area, Occ. Rooms = Occupied Rooms

Appendix D: Approved Background Projects Trip Generation

Table 1 - 701-729 E Evelyn Avenue
Trip Generation Rates

Land Use Category	Source	ITE Code	Rate Unit	Daily Trip Rate/Unit	Weekday AM Peak Hour Rate/Unit			Weekday PM Peak Hour Rate/Unit		
					Total	In%	Out%	Total	In%	Out%
Residential Condominium/Townhouse	ITE	230	DU	5.86	0.45	17%	83%	0.53	67%	33%

Notes: 1. DU = Dwelling Unit, ksf - 1000 sqft Floor Area

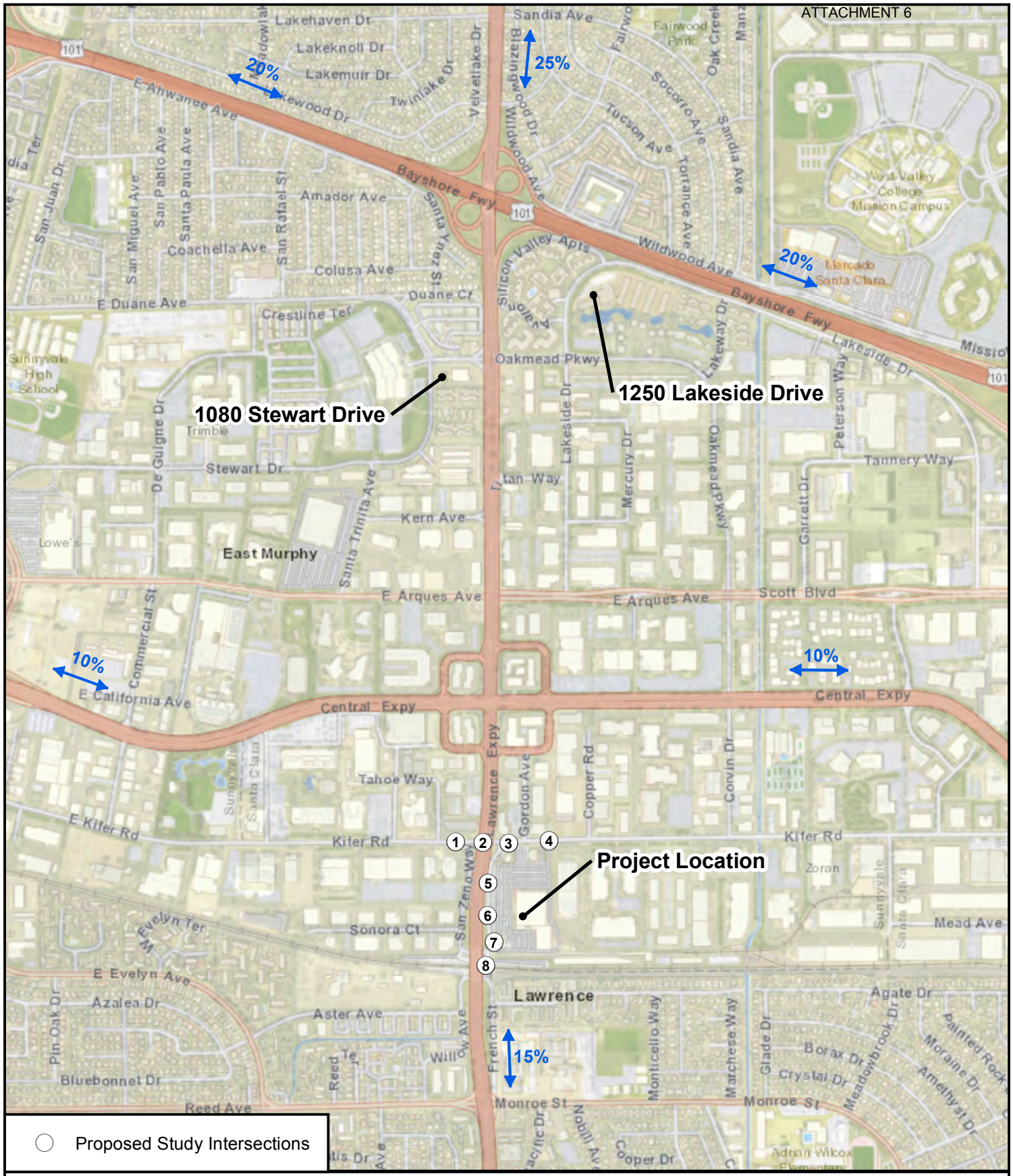
Table 2 -701-729 E Evelyn Avenue
Trip Generation Volumes

Land Use Category	Units	Quantity	Daily Trips	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Total	In	Out	Total	In	Out
Residential Condominium/Townhouse	DU	204	1,196	91	15	76	108	72	36
VTA Reduction (Major Bus Stop) - 2%		2%	-24	-2	0	-2	-2	-1	-1
Project Trip Generation			***1,172***	***89***	***15***	***74***	***106***	***71***	***35***

Notes: 1. DU = Dwelling Unit, ksf - 1000 sqft Floor Area

Appendix E
Approved Background Projects Trip Distribution

ATTACHMENT 6



Appendix E - Approved Background Projects
Trip Distribution #1
1080 Stewart Drive and 1250 Lakeside Drive
Sunnyvale, CA
September, 2017

NORTH

0 800 1,600
Feet

WOOD RODGERS

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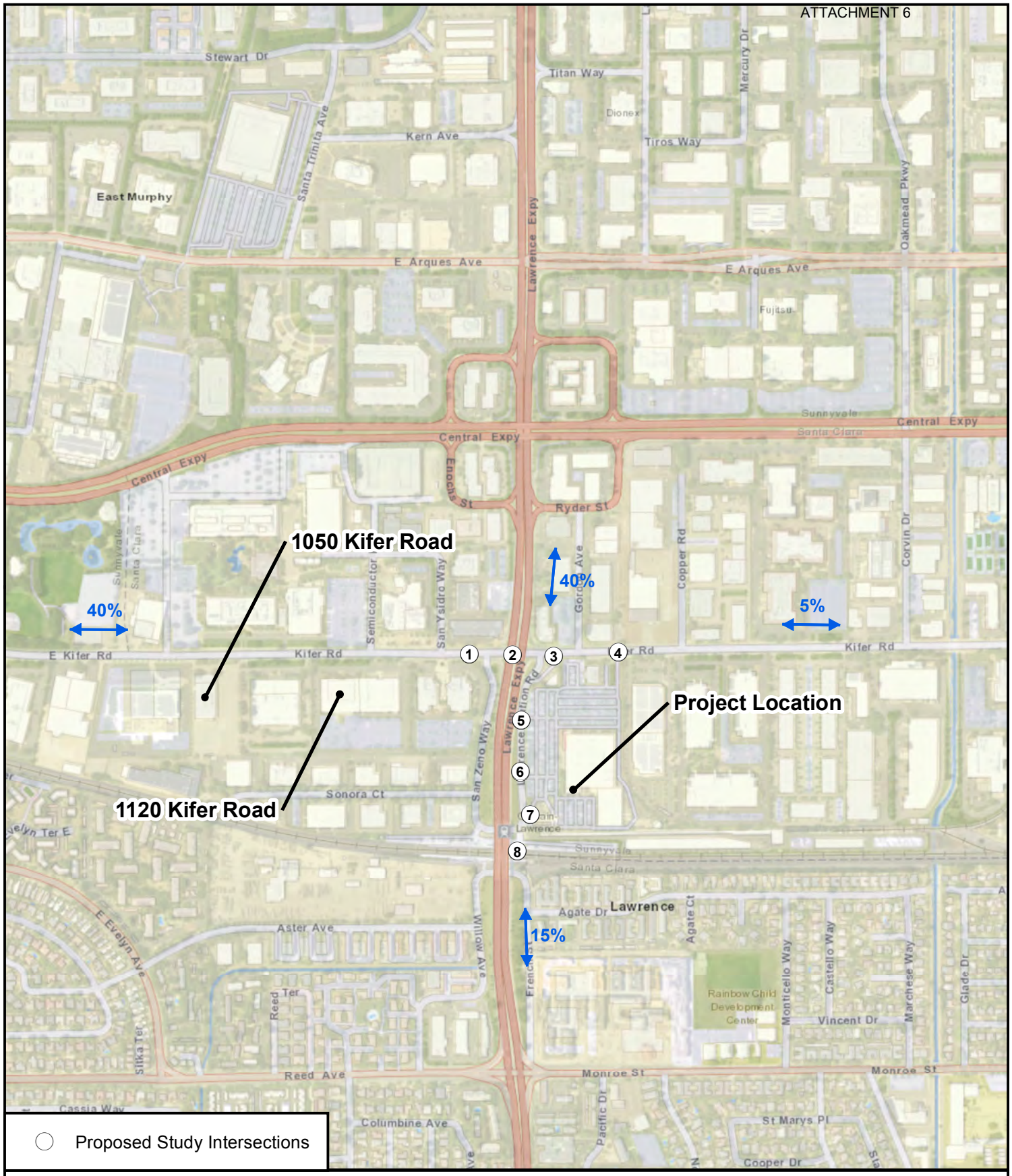


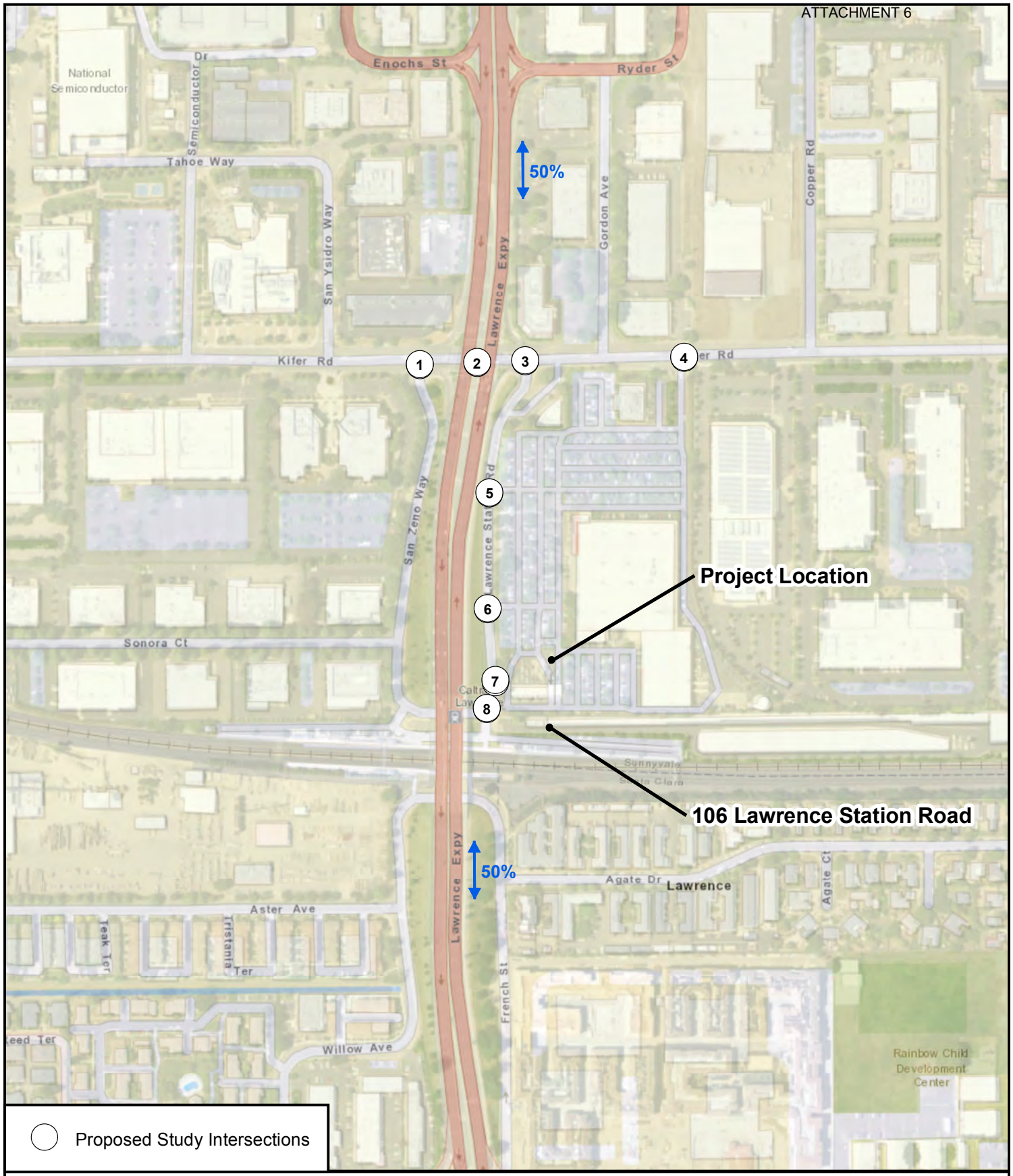
Proposed Study Intersections

Appendix E - Approved Background Projects
Trip Distribution #2
1050 Kifer Road and 1120 Kifer Road
Sunnyvale, CA
September, 2017

NORTH

0 500 1,000
Feet

WOOD RODGERS

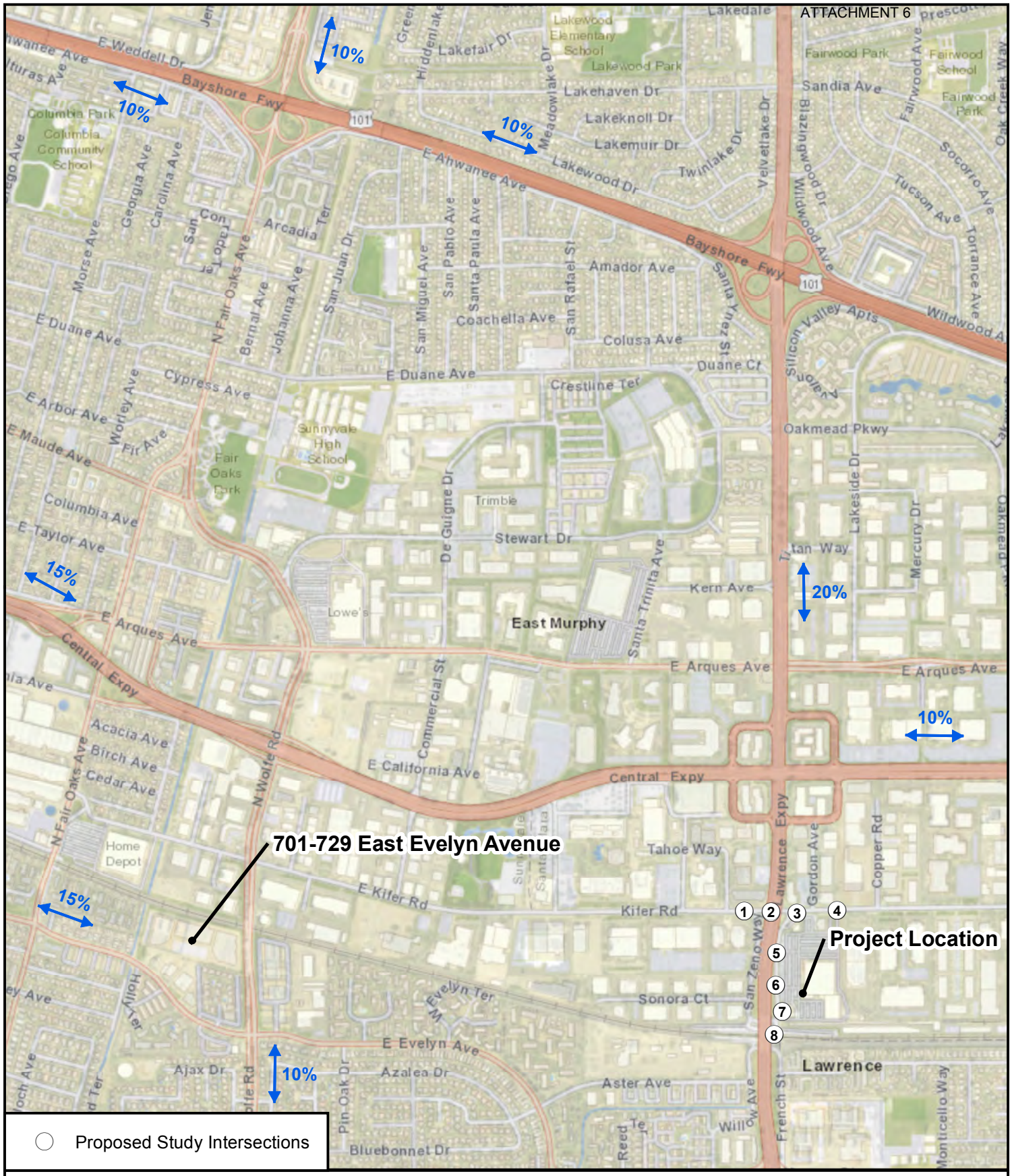


Appendix E - Approved Background Projects
Trip Distribution #3
160 Lawrence Station Road
Sunnyvale, CA
September, 2017

NORTH

0 250 500
Feet

WOOD RODGERS



Appendix E - Approved Background Projects
Trip Distribution #4
701-729 East Evelyn Avenue
Sunnyvale, CA
September, 2017

NORTH

0 800 1,600
Feet

WOOD RODGERS

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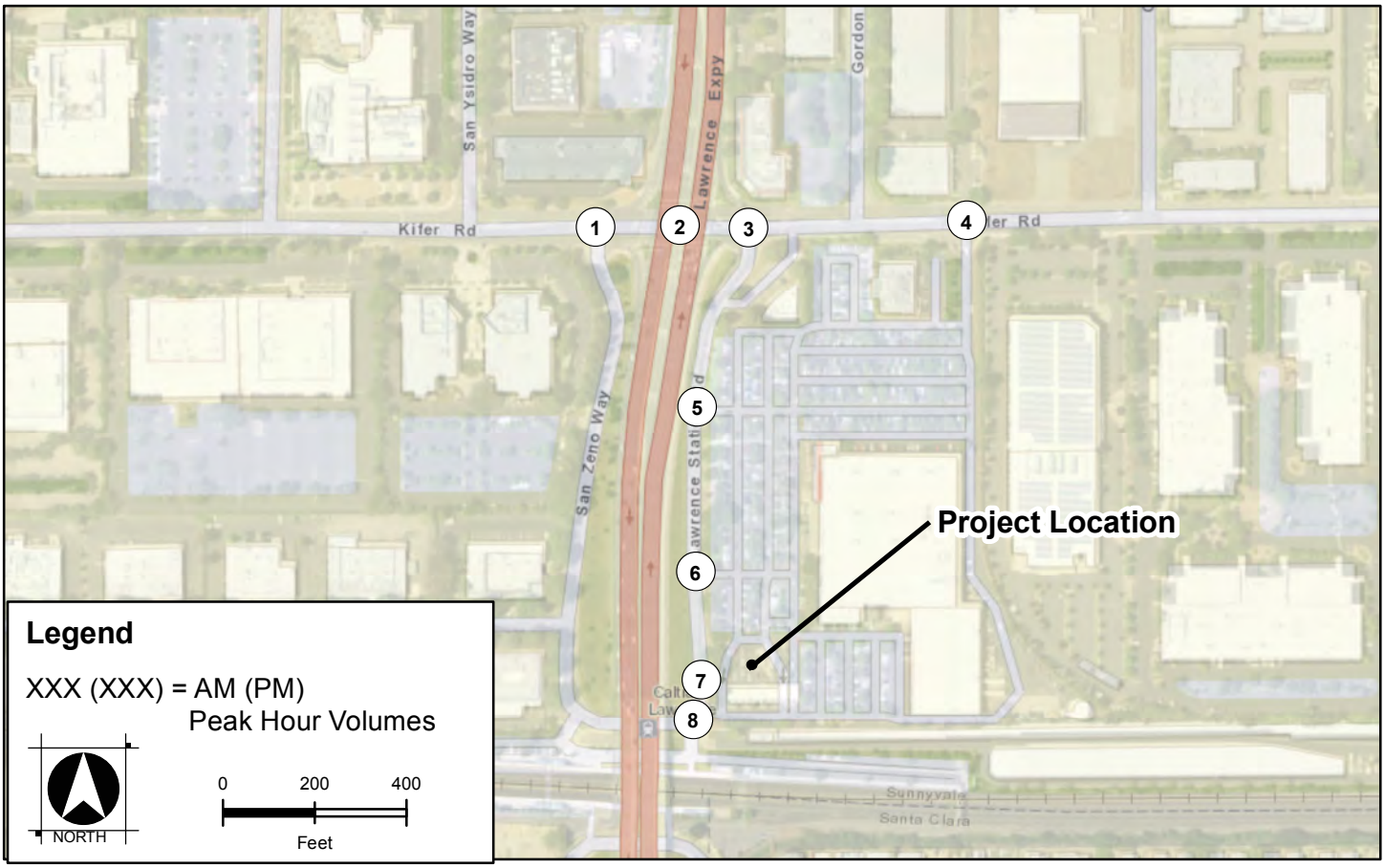
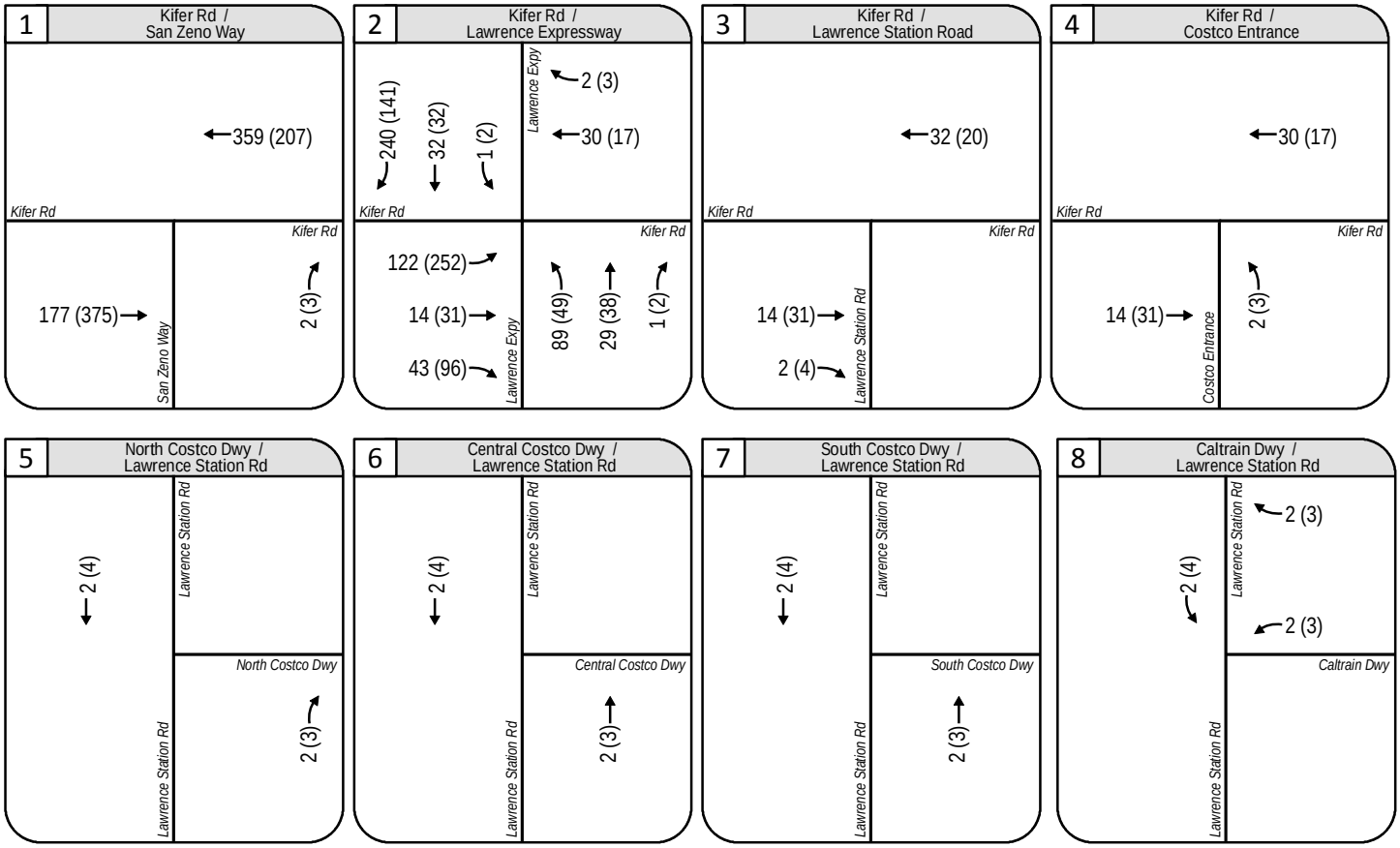
Appendix F
Approved Background Projects Volumes





Approved Background Projects Volumes

150 Lawrence Station Road TOA
Sunnyvale, CA
September 2017

Appendix F

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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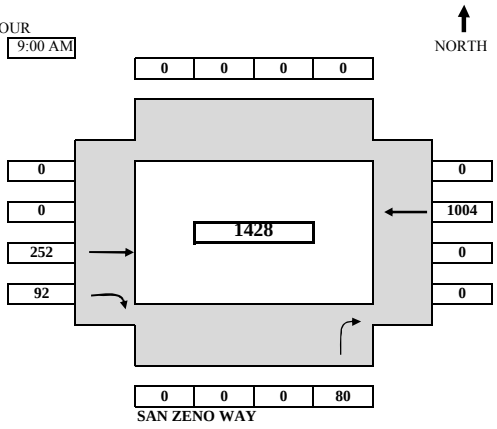
Appendix G
Raw Count Sheets

B.A.Y.M.E.T.R.I.C.S.

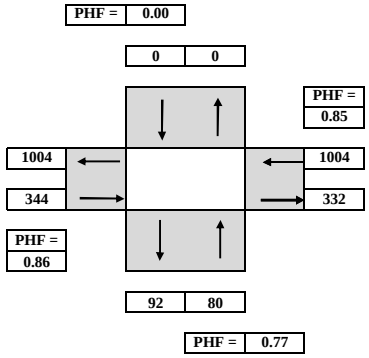
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**SAN ZENO WAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-1AM**

PEAK HOUR
8:00 AM to 9:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME From	TO	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM				13							11	8			136		**168**
7:15 AM	7:30 AM				32							36	18			263		**349**
7:30 AM	7:45 AM				57							69	30			450		**606**
7:45 AM	8:00 AM				73							120	51			665		**909**
8:00 AM	8:15 AM				87							163	71			959		**1280**
8:15 AM	8:30 AM				113							241	93			1189		**1636**
8:30 AM	8:45 AM				139							302	120			1438		**1999**
8:45 AM	9:00 AM				153							372	143			1669		**2337**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	0	13	0	0	0	0	0	0	11	8	0	0	136	0	**168**
7:15 AM	7:30 AM	0	0	0	19	0	0	0	0	0	0	25	10	0	0	127	0	**181**
7:30 AM	7:45 AM	0	0	0	25	0	0	0	0	0	0	33	12	0	0	187	0	**257**
7:45 AM	8:00 AM	0	0	0	16	0	0	0	0	0	0	51	21	0	0	215	0	**303**
8:00 AM	8:15 AM	0	0	0	14	0	0	0	0	0	0	43	20	0	0	294	0	**371**
8:15 AM	8:30 AM	0	0	0	26	0	0	0	0	0	0	78	22	0	0	230	0	**356**
8:30 AM	8:45 AM	0	0	0	26	0	0	0	0	0	0	61	27	0	0	249	0	**363**
8:45 AM	9:00 AM	0	0	0	14	0	0	0	0	0	0	70	23	0	0	231	0	**338**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	0	0	73	0	0	0	0	0	0	120	51	0	0	665	0	**909**
7:15 AM	8:15 AM	0	0	0	74	0	0	0	0	0	0	152	63	0	0	823	0	**1112**
7:30 AM	8:30 AM	0	0	0	81	0	0	0	0	0	0	205	75	0	0	926	0	**1287**
7:45 AM	8:45 AM	0	0	0	82	0	0	0	0	0	0	233	90	0	0	988	0	**1393**
8:00 AM	9:00 AM	0	0	0	80	0	0	0	0	0	0	252	92	0	0	1004	0	**1428**

PEAK HOUR SUMMARY

8:00 AM to 9:00 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	80	0	0	0	0	0	0	252	92	0	0	1004	0	**1428**
PHF BY MOVEMENT	0.00	0.00	0.00	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.81	0.85	0.00	0.00	0.85	0.00	OVERALL
PHF BY APPROACH	0.77				0.00				0.86				0.85				0.96
BICYCLE	5				0				7				5				**17**
PEDESTRIAN	0				0				14				2				**16**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				16				0				0				**16**

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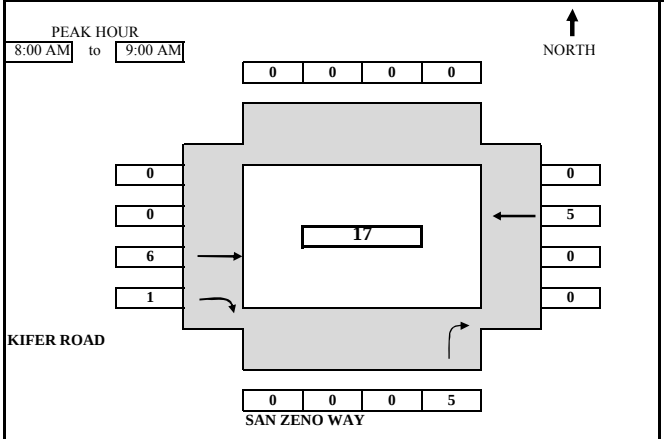
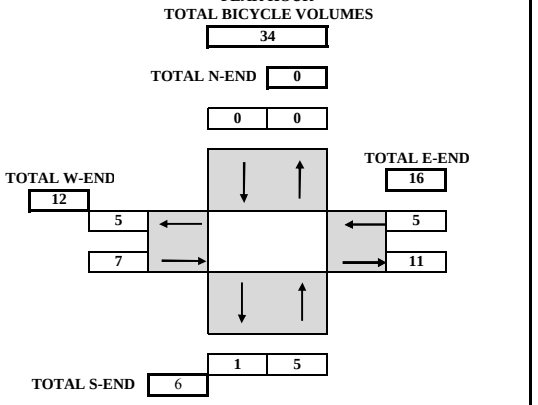
B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**SAN ZENO WAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-1AM**





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	**6**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	4	2	0	0	4	0	**10**
8:00 AM	to	8:15 AM	0	0	0	4	0	0	0	0	0	0	5	2	0	0	5	0	**16**
8:15 AM	to	8:30 AM	0	0	0	4	0	0	0	0	0	0	5	3	0	0	8	0	**20**
8:30 AM	to	8:45 AM	0	0	0	5	0	0	0	0	0	0	8	3	0	0	8	0	**24**
8:45 AM	to	9:00 AM	0	0	0	5	0	0	0	0	0	0	10	3	0	0	9	0	**27**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	0	**6**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	**4**
8:00 AM	to	8:15 AM	0	0	0	4	0	0	0	0	0	0	1	0	0	0	1	0	**6**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	**4**
8:30 AM	to	8:45 AM	0	0	0	1	0	0	0	0	0	0	3	0	0	0	0	0	**4**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	**3**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	4	2	0	0	4	0	**10**
7:15 AM	to	8:15 AM	0	0	0	4	0	0	0	0	0	0	5	2	0	0	5	0	**16**
7:30 AM	to	8:30 AM	0	0	0	4	0	0	0	0	0	0	5	3	0	0	8	0	**20**
7:45 AM	to	8:45 AM	0	0	0	5	0	0	0	0	0	0	6	2	0	0	5	0	**18**
8:00 AM	to	9:00 AM	0	0	0	5	0	0	0	0	0	0	6	1	0	0	5	0	**17**

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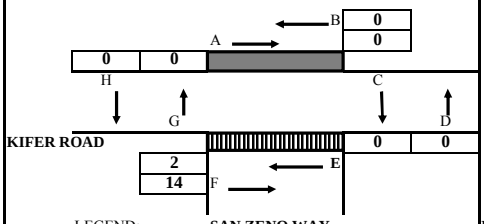
8:00 AM to 9:00 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	5	0	7	5	**17**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**SAN ZENO WAY**	**DAY:**	**TUESDAY**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-1AM**

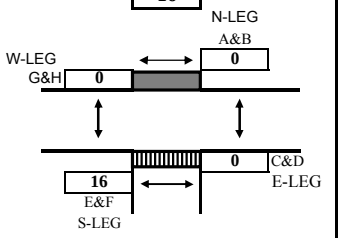
PEAK HOUR
08:00 AM TO 09:00 AM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

SAN ZENO WAY

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES
16



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**16**	**SB**(C+H)	**0**
E-LEG	**0**	**EB**(A+F)	**14**
W-LEG	**0**	**WB**(B+E)	**2**

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	1	0	0	0	***1***
07:30 AM	---	07:45 AM	0	0	0	0	1	0	0	0	***1***
07:45 AM	---	08:00 AM	0	0	0	0	2	0	0	0	***2***
08:00 AM	---	08:15 AM	0	0	0	0	2	4	0	0	***6***
08:15 AM	---	08:30 AM	0	0	0	0	2	12	0	0	***14***
08:30 AM	---	08:45 AM	0	0	0	0	4	13	0	0	***17***
08:45 AM	---	09:00 AM	0	0	0	0	4	14	0	0	***18***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	1	0	0	0	***1***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	1	0	0	0	***1***
08:00 AM	---	08:15 AM	0	0	0	0	0	4	0	0	***4***
08:15 AM	---	08:30 AM	0	0	0	0	0	8	0	0	***8***
08:30 AM	---	08:45 AM	0	0	0	0	2	1	0	0	***3***
08:45 AM	---	09:00 AM	0	0	0	0	0	1	0	0	***1***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	2	0	0	0	***2***
07:15 AM	---	08:15 AM	0	0	0	0	2	4	0	0	***6***
07:30 AM	---	08:30 AM	0	0	0	0	1	12	0	0	***13***
07:45 AM	---	08:45 AM	0	0	0	0	3	13	0	0	***16***
08:00 AM	---	09:00 AM	0	0	0	0	2	14	0	0	***16***

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12:00 AM to 12:00 AM

VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	14	2	**16**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	16	0	0	**16**

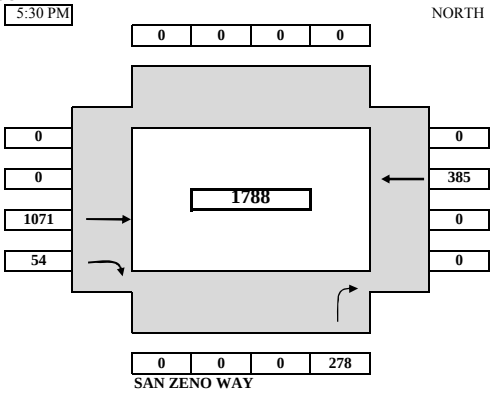
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

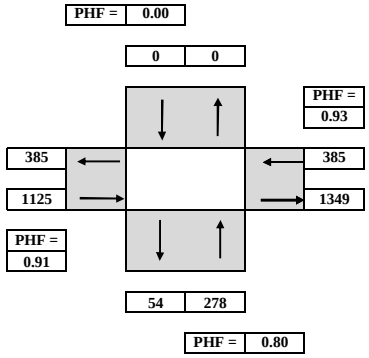
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**SAN ZENO WAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-1PM**

PEAK HOUR
4:30 PM to 5:30 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM				97							368	28			93		**586**
4:15 PM	to	4:30 PM				135							508	37			166		**846**
4:30 PM	to	4:45 PM				208							788	54			251		**1301**
4:45 PM	to	5:00 PM				274							1069	74			346		**1763**
5:00 PM	to	5:15 PM				361							1367	86			447		**2261**
5:15 PM	to	5:30 PM				413							1579	91			551		**2634**
5:30 PM	to	5:45 PM				474							1826	97			634		**3031**
5:45 PM	to	6:00 PM				536							2068	114			749		**3467**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	97	0	0	0	0	0	0	368	28	0	0	93	0	**586**
4:15 PM	to	4:30 PM	0	0	0	38	0	0	0	0	0	0	140	9	0	0	73	0	**260**
4:30 PM	to	4:45 PM	0	0	0	73	0	0	0	0	0	0	280	17	0	0	85	0	**455**
4:45 PM	to	5:00 PM	0	0	0	66	0	0	0	0	0	0	281	20	0	0	95	0	**462**
5:00 PM	to	5:15 PM	0	0	0	87	0	0	0	0	0	0	298	12	0	0	101	0	**498**
5:15 PM	to	5:30 PM	0	0	0	52	0	0	0	0	0	0	212	5	0	0	104	0	**373**
5:30 PM	to	5:45 PM	0	0	0	61	0	0	0	0	0	0	247	6	0	0	83	0	**397**
5:45 PM	to	6:00 PM	0	0	0	62	0	0	0	0	0	0	242	17	0	0	115	0	**436**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	274	0	0	0	0	0	0	1069	74	0	0	346	0	**1763**
4:15 PM	to	5:15 PM	0	0	0	264	0	0	0	0	0	0	999	58	0	0	354	0	**1675**
4:30 PM	to	5:30 PM	0	0	0	278	0	0	0	0	0	0	1071	54	0	0	385	0	**1788**
4:45 PM	to	5:45 PM	0	0	0	266	0	0	0	0	0	0	1038	43	0	0	383	0	**1730**
5:00 PM	to	6:00 PM	0	0	0	262	0	0	0	0	0	0	999	40	0	0	403	0	**1704**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	278	0	0	0	0	0	0	1071	54	0	0	385	0	**1788**
PHF BY MOVEMENT	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.68	0.00	0.00	0.93	0.00	OVERALL
PHF BY APPROACH	0.80				0.00				0.91				0.93				0.90
BICYCLE	0				0				7				7				**14**
PEDESTRIAN	0				0				2				12				**14**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				14				0				0				**14**

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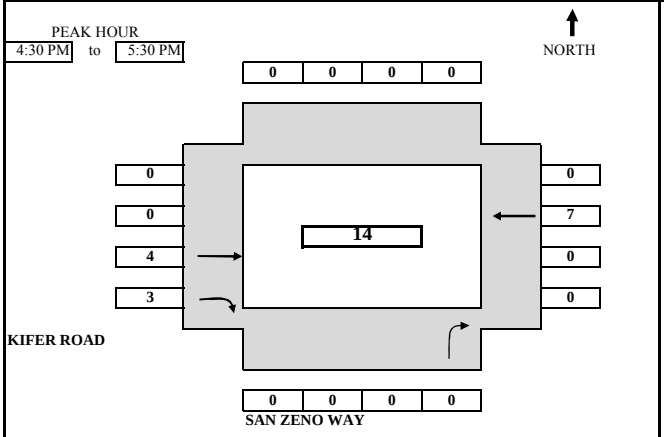
B.A.Y.M.E.T.R.I.C.S.

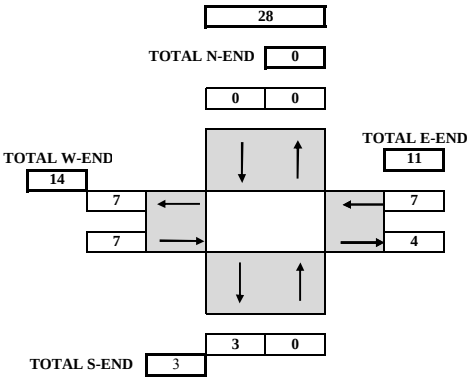
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**SAN ZENO WAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-1PM**

PEAK HOUR
4:30 PM to 5:30 PM



PEAK HOUR
TOTAL BICYCLE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	1	0	**5**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	1	0	**5**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	5	0	**11**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	5	3	0	0	7	0	**15**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	6	4	0	0	8	0	**18**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	6	4	0	0	10	0	**20**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	1	0	**4**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	**6**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	**4**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	**3**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	**2**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	1	0	**5**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	5	0	**11**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	4	3	0	0	7	0	**14**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	7	0	**13**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	9	0	**15**

TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

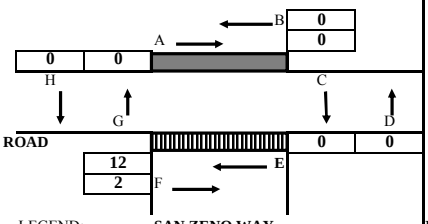
4:30 PM to 5:30 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	0	0	7	7	**14**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**SAN ZENO WAY**	**DAY:**	**TUESDAY**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-1PM**

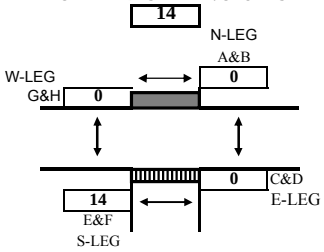
PEAK HOUR
04:30 PM TO 05:30 PM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

SAN ZENO WAY

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES
14



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**14**	**SB**(C+H)	**0**
E-LEG	**0**	**EB**(A+F)	**2**
W-LEG	**0**	**WB**(B+E)	**12**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	1	2	0	0	***3***
04:15 PM	---	04:30 PM	0	0	0	0	1	2	0	0	***3***
04:30 PM	---	04:45 PM	0	0	0	0	6	2	0	0	***8***
04:45 PM	---	05:00 PM	0	0	0	0	7	3	0	0	***10***
05:00 PM	---	05:15 PM	0	0	0	0	10	4	0	0	***14***
05:15 PM	---	05:30 PM	0	0	0	0	13	4	0	0	***17***
05:30 PM	---	05:45 PM	0	0	0	0	16	4	0	0	***20***
05:45 PM	---	06:00 PM	0	0	0	0	22	4	0	0	***26***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	1	2	0	0	***3***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	5	0	0	0	***5***
04:45 PM	---	05:00 PM	0	0	0	0	1	1	0	0	***2***
05:00 PM	---	05:15 PM	0	0	0	0	3	1	0	0	***4***
05:15 PM	---	05:30 PM	0	0	0	0	3	0	0	0	***3***
05:30 PM	---	05:45 PM	0	0	0	0	3	0	0	0	***3***
05:45 PM	---	06:00 PM	0	0	0	0	6	0	0	0	***6***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	7	3	0	0	***10***
04:15 PM	---	05:15 PM	0	0	0	0	9	2	0	0	***11***
04:30 PM	---	05:30 PM	0	0	0	0	12	2	0	0	***14***
04:45 PM	---	05:45 PM	0	0	0	0	10	2	0	0	***12***
05:00 PM	---	06:00 PM	0	0	0	0	15	1	0	0	***16***

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12:00 AM to 12:00 AM

VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	2	12	**14**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	14	0	0	**14**

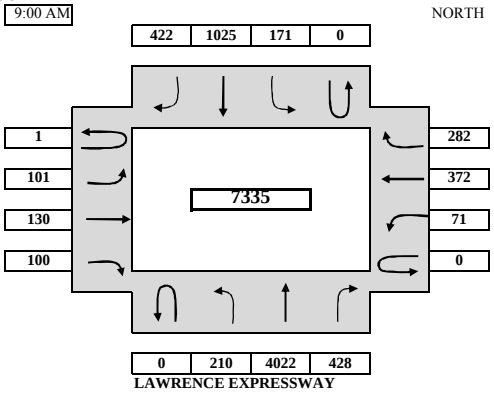
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

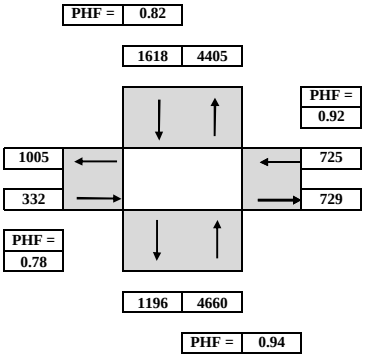
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE EXPRESSWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-2AM**

PEAK HOUR
8:00 AM to 9:00 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM		56	623	52		38	287	41	0	4	1	12		16	40	28	**1198**
7:15 AM	to	7:30 AM		88	1311	122		67	508	97	0	19	12	34		30	78	56	**2422**
7:30 AM	to	7:45 AM		127	2146	206		107	804	178	0	37	24	59		50	143	92	**3973**
7:45 AM	to	8:00 AM		183	3002	299		164	1084	248	0	63	48	80		66	234	145	**5616**
8:00 AM	to	8:15 AM		236	4057	409		207	1393	392	0	76	72	98		83	330	213	**7566**
8:15 AM	to	8:30 AM		292	5141	507		257	1653	469	1	101	113	137		100	427	283	**9481**
8:30 AM	to	8:45 AM		346	5967	627		291	1850	566	1	130	142	164		121	526	360	**11091**
8:45 AM	to	9:00 AM		393	7024	727		335	2109	670	1	164	178	180		137	606	427	**12951**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	56	623	52	0	38	287	41	0	4	1	12	0	16	40	28	**1198**
7:15 AM	to	7:30 AM	0	32	688	70	0	29	221	56	0	15	11	22	0	14	38	28	**1224**
7:30 AM	to	7:45 AM	0	39	835	84	0	40	296	81	0	18	12	25	0	20	65	36	**1551**
7:45 AM	to	8:00 AM	0	56	856	93	0	57	280	70	0	26	24	21	0	16	91	53	**1643**
8:00 AM	to	8:15 AM	0	53	1055	110	0	43	309	144	0	13	24	18	0	17	96	68	**1950**
8:15 AM	to	8:30 AM	0	56	1084	98	0	50	260	77	1	25	41	39	0	17	97	70	**1915**
8:30 AM	to	8:45 AM	0	54	826	120	0	34	197	97	0	29	29	27	0	21	99	77	**1610**
8:45 AM	to	9:00 AM	0	47	1057	100	0	44	259	104	0	34	36	16	0	16	80	67	**1860**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	183	3002	299	0	164	1084	248	0	63	48	80	0	66	234	145	**5616**
7:15 AM	to	8:15 AM	0	180	3434	357	0	169	1106	351	0	72	71	86	0	67	290	185	**6368**
7:30 AM	to	8:30 AM	0	204	3830	385	0	190	1145	372	1	82	101	103	0	70	349	227	**7059**
7:45 AM	to	8:45 AM	0	219	3821	421	0	184	1046	388	1	93	118	105	0	71	383	268	**7118**
8:00 AM	to	9:00 AM	0	210	4022	428	0	171	1025	422	1	101	130	100	0	71	372	282	**7335**

PEAK HOUR SUMMARY

8:00 AM to 9:00 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	210	4022	428	0	171	1025	422	1	101	130	100	0	71	372	282	**7335**
PHF BY MOVEMENT	0.00	0.94	0.93	0.89	0.00	0.86	0.83	0.73	0.25	0.74	0.79	0.64	0.00	0.85	0.94	0.92	OVERALL
PHF BY APPROACH	0.94				0.82				0.78				0.92				0.94
BICYCLE	11				7				6				1				**25**
PEDESTRIAN	3				18				2				1				**24**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	1				2				7				14				**24**

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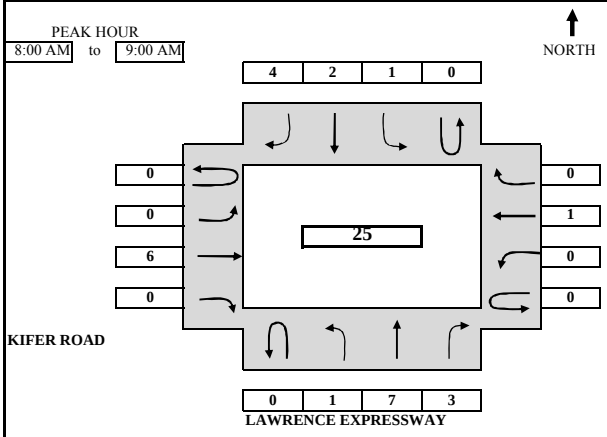
B.A.Y.M.E.T.R.I.C.S.

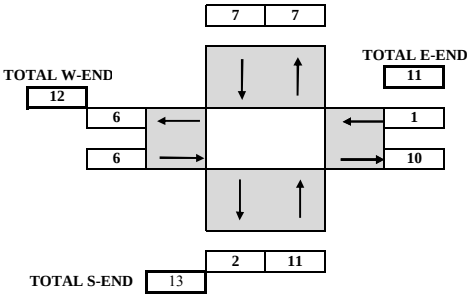
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE EXPRESSWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-2AM**

PEAK HOUR
8:00 AM to 9:00 AM



PEAK HOUR
TOTAL BICYCLE VOLUMES
50



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
7:15 AM	to	7:30 AM	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	**3**
7:30 AM	to	7:45 AM	0	0	3	0	0	0	0	2	0	0	2	0	0	0	2	0	**9**
7:45 AM	to	8:00 AM	0	0	6	0	0	0	0	3	0	1	3	0	0	0	2	0	**15**
8:00 AM	to	8:15 AM	0	0	8	1	0	0	0	3	0	1	4	0	0	0	3	0	**20**
8:15 AM	to	8:30 AM	0	0	8	2	0	1	1	6	0	1	4	0	0	0	3	0	**26**
8:30 AM	to	8:45 AM	0	0	10	3	0	1	1	6	0	1	7	0	0	0	3	0	**32**
8:45 AM	to	9:00 AM	0	1	13	3	0	1	2	7	0	1	9	0	0	0	3	0	**40**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
7:15 AM	to	7:30 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
7:30 AM	to	7:45 AM	0	0	1	0	0	0	0	1	0	0	2	0	0	0	2	0	**6**
7:45 AM	to	8:00 AM	0	0	3	0	0	0	0	1	0	1	1	0	0	0	0	0	**6**
8:00 AM	to	8:15 AM	0	0	2	1	0	0	0	0	0	0	1	0	0	0	1	0	**5**
8:15 AM	to	8:30 AM	0	0	0	1	0	1	1	3	0	0	0	0	0	0	0	0	**6**
8:30 AM	to	8:45 AM	0	0	2	1	0	0	0	0	0	0	3	0	0	0	0	0	**6**
8:45 AM	to	9:00 AM	0	1	3	0	0	0	1	1	0	0	2	0	0	0	0	0	**8**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	6	0	0	0	0	3	0	1	3	0	0	0	2	0	**15**
7:15 AM	to	8:15 AM	0	0	8	1	0	0	0	2	0	1	4	0	0	0	3	0	**19**
7:30 AM	to	8:30 AM	0	0	6	2	0	1	1	5	0	1	4	0	0	0	3	0	**23**
7:45 AM	to	8:45 AM	0	0	7	3	0	1	1	4	0	1	5	0	0	0	1	0	**23**
8:00 AM	to	9:00 AM	0	1	7	3	0	1	2	4	0	0	6	0	0	0	1	0	**25**

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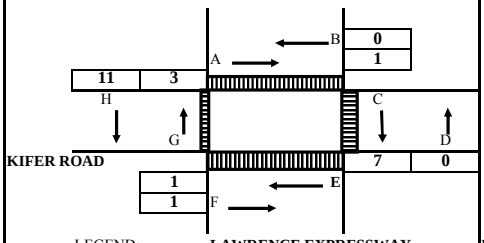
8:00 AM to 9:00 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	11	7	6	1	**25**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE EXPRESSWAY**	**DAY:**	**TUESDAY**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-2AM**

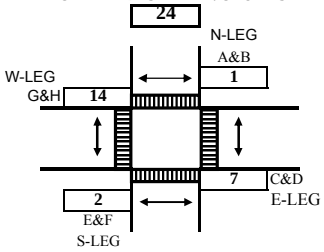
PEAK HOUR
08:00 AM TO 09:00 AM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE EXPRESSWAY

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
N-LEG	**1**	**NB**(D+G)	**3**
S-LEG	**2**	**SB**(C+H)	**18**
E-LEG	**7**	**EB**(A+F)	**2**
W-LEG	**14**	**WB**(B+E)	**1**

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	1	1	0	0	0	0	0	0	***2***
07:15 AM	---	07:30 AM	2	3	2	2	0	0	0	1	***10***
07:30 AM	---	07:45 AM	3	3	3	2	0	0	0	1	***12***
07:45 AM	---	08:00 AM	3	3	5	2	0	0	1	2	***16***
08:00 AM	---	08:15 AM	3	3	6	2	1	0	1	5	***21***
08:15 AM	---	08:30 AM	4	3	11	2	1	0	2	9	***32***
08:30 AM	---	08:45 AM	4	3	11	2	1	0	4	9	***34***
08:45 AM	---	09:00 AM	4	3	12	2	1	1	4	13	***40***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	1	1	0	0	0	0	0	0	***2***
07:15 AM	---	07:30 AM	1	2	2	2	0	0	0	1	***8***
07:30 AM	---	07:45 AM	1	0	1	0	0	0	0	0	***2***
07:45 AM	---	08:00 AM	0	0	2	0	0	0	1	1	***4***
08:00 AM	---	08:15 AM	0	0	1	0	1	0	0	3	***5***
08:15 AM	---	08:30 AM	1	0	5	0	0	0	1	4	***11***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	2	0	***2***
08:45 AM	---	09:00 AM	0	0	1	0	0	1	0	4	***6***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	3	3	5	2	0	0	1	2	***16***
07:15 AM	---	08:15 AM	2	2	6	2	1	0	1	5	***19***
07:30 AM	---	08:30 AM	2	0	9	0	1	0	2	8	***22***
07:45 AM	---	08:45 AM	1	0	8	0	1	0	4	8	***22***
08:00 AM	---	09:00 AM	1	0	7	0	1	1	3	11	***24***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

12:00 AM to 12:00 AM

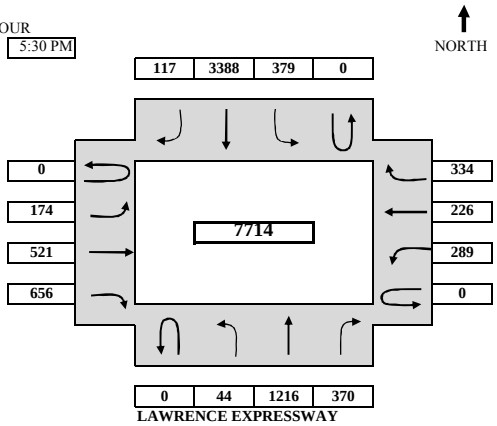
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	3	18	2	1	**24**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	1	2	7	14	**24**

B.A.Y.M.E.T.R.I.C.S.

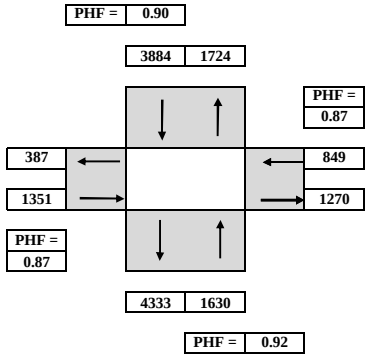
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE EXPRESSWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-2PM**

PEAK HOUR
4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM		9	326	104		96	731	57		56	169	250		74	28	67	**1967**
4:15 PM	to	4:30 PM		21	623	200		173	1455	75		82	230	330		138	70	140	**3537**
4:30 PM	to	4:45 PM		29	968	289		289	2383	107		121	375	501		199	116	209	**5586**
4:45 PM	to	5:00 PM		40	1238	371		374	3100	147		175	506	662		274	161	274	**7322**
5:00 PM	to	5:15 PM		57	1516	479		475	3986	169		231	639	860		359	222	373	**9366**
5:15 PM	to	5:30 PM		65	1839	570		552	4843	192		256	751	986		427	296	474	**11251**
5:30 PM	to	5:45 PM		79	2172	635		638	5706	208		295	878	1131		491	346	531	**13110**
5:45 PM	to	6:00 PM		88	2470	719		719	6429	249		335	1006	1266		560	412	619	**14872**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	9	326	104	0	96	731	57	0	56	169	250	0	74	28	67	**1967**
4:15 PM	to	4:30 PM	0	12	297	96	0	77	724	18	0	26	61	80	0	64	42	73	**1570**
4:30 PM	to	4:45 PM	0	8	345	89	0	116	928	32	0	39	145	171	0	61	46	69	**2049**
4:45 PM	to	5:00 PM	0	11	270	82	0	85	717	40	0	54	131	161	0	75	45	65	**1736**
5:00 PM	to	5:15 PM	0	17	278	108	0	101	886	22	0	56	133	198	0	85	61	99	**2044**
5:15 PM	to	5:30 PM	0	8	323	91	0	77	857	23	0	25	112	126	0	68	74	101	**1885**
5:30 PM	to	5:45 PM	0	14	333	65	0	86	863	16	0	39	127	145	0	64	50	57	**1859**
5:45 PM	to	6:00 PM	0	9	298	84	0	81	723	41	0	40	128	135	0	69	66	88	**1762**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	40	1238	371	0	374	3100	147	0	175	506	662	0	274	161	274	**7322**
4:15 PM	to	5:15 PM	0	48	1190	375	0	379	3255	112	0	175	470	610	0	285	194	306	**7399**
4:30 PM	to	5:30 PM	0	44	1216	370	0	379	3388	117	0	174	521	656	0	289	226	334	**7714**
4:45 PM	to	5:45 PM	0	50	1204	346	0	349	3323	101	0	174	503	630	0	292	230	322	**7524**
5:00 PM	to	6:00 PM	0	48	1232	348	0	345	3329	102	0	160	500	604	0	286	251	345	**7550**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	44	1216	370	0	379	3388	117	0	174	521	656	0	289	226	334	**7714**
PHF BY MOVEMENT	0.00	0.65	0.88	0.86	0.00	0.82	0.91	0.73	0.00	0.78	0.90	0.83	0.00	0.85	0.76	0.83	OVERALL
PHF BY APPROACH	0.92				0.90				0.87				0.87				0.94
BICYCLE	0				5				5				7				**17**
PEDESTRIAN	6				2				0				3				**11**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	3				0				6				2				**11**

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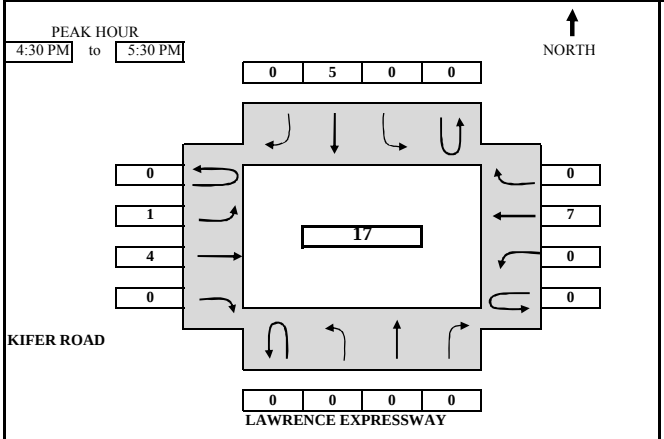
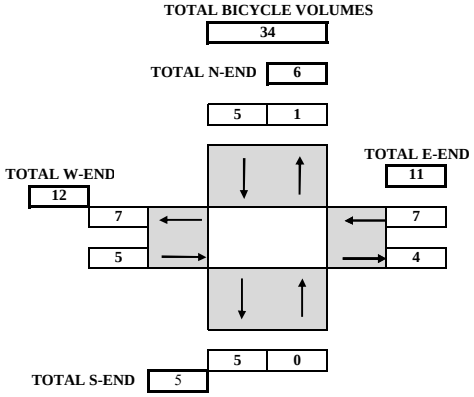
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE EXPRESSWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-2PM**

PEAK HOUR
4:30 PM to 5:30 PM





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	4	0	0	0	1	0	0	0	0	0	**5**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	8	0	0	0	1	0	0	0	1	0	**10**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	9	0	0	0	1	0	0	0	1	0	**11**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	9	0	0	1	3	0	0	0	5	0	**18**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	9	0	0	1	5	0	0	0	7	0	**22**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	13	0	0	2	5	0	0	0	8	0	**28**
5:45 PM	to	6:00 PM	0	0	3	0	0	0	16	0	0	2	5	0	0	0	10	1	**37**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	**4**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	0	**5**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	4	0	**7**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	**4**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	4	0	0	1	0	0	0	0	1	0	**6**
5:45 PM	to	6:00 PM	0	0	3	0	0	0	3	0	0	0	0	0	0	0	2	1	**9**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	0	0	0	9	0	0	0	1	0	0	0	1	0	**11**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	8	0	0	1	3	0	0	0	5	0	**17**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	5	0	0	1	4	0	0	0	7	0	**17**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	5	0	0	2	4	0	0	0	7	0	**18**
5:00 PM	to	6:00 PM	0	0	3	0	0	0	7	0	0	2	4	0	0	0	9	1	**26**

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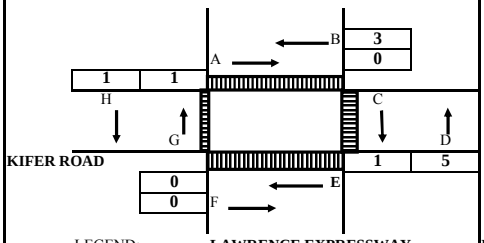
4:30 PM to 5:30 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	0	5	5	7	**17**

B.A.Y.M.E.T.R.I.C.S.

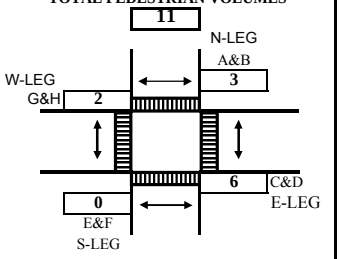
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE EXPRESSWAY**	**DAY:**	**TUESDAY**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-2PM**

PEAK HOUR
04:30 PM TO 05:30 PM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE EXPRESSWAY

BY LEG:		**BY DIRECTION:**	
N-LEG	**3**	**NB**(D+G)	**6**
S-LEG	**0**	**SB**(C+H)	**2**
E-LEG	**6**	**EB**(A+F)	**0**
W-LEG	**2**	**WB**(B+E)	**3**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	3	1	1	0	0	1	1	***7***
04:15 PM	---	04:30 PM	1	3	2	1	0	0	3	1	***11***
04:30 PM	---	04:45 PM	1	3	2	3	0	0	4	2	***15***
04:45 PM	---	05:00 PM	1	5	2	4	0	0	4	2	***18***
05:00 PM	---	05:15 PM	1	6	3	5	0	0	4	2	***21***
05:15 PM	---	05:30 PM	1	6	3	6	0	0	4	2	***22***
05:30 PM	---	05:45 PM	1	7	3	6	0	0	7	2	***26***
05:45 PM	---	06:00 PM	1	7	3	9	0	0	7	2	***29***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	3	1	1	0	0	1	1	***7***
04:15 PM	---	04:30 PM	1	0	1	0	0	0	2	0	***4***
04:30 PM	---	04:45 PM	0	0	0	2	0	0	1	1	***4***
04:45 PM	---	05:00 PM	0	2	0	1	0	0	0	0	***3***
05:00 PM	---	05:15 PM	0	1	1	1	0	0	0	0	***3***
05:15 PM	---	05:30 PM	0	0	0	1	0	0	0	0	***1***
05:30 PM	---	05:45 PM	0	1	0	0	0	0	3	0	***4***
05:45 PM	---	06:00 PM	0	0	0	3	0	0	0	0	***3***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	1	5	2	4	0	0	4	2	***18***
04:15 PM	---	05:15 PM	1	3	2	4	0	0	3	1	***14***
04:30 PM	---	05:30 PM	0	3	1	5	0	0	1	1	***11***
04:45 PM	---	05:45 PM	0	4	1	3	0	0	3	0	***11***
05:00 PM	---	06:00 PM	0	2	1	5	0	0	3	0	***11***

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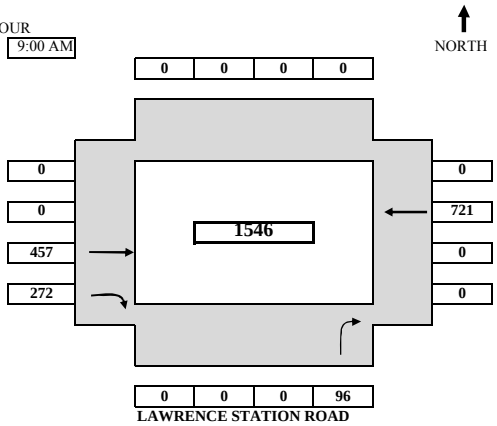
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	6	2	0	3	**11**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	3	0	6	2	**11**

B.A.Y.M.E.T.R.I.C.S.

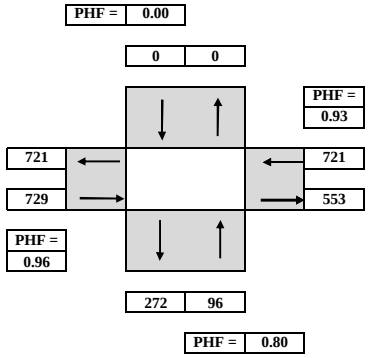
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-3AM**

PEAK HOUR
8:00 AM to 9:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM				14							57	38			82		**191**
7:15 AM	to	7:30 AM				26							119	85			163		**393**
7:30 AM	to	7:45 AM				41							208	135			281		**665**
7:45 AM	to	8:00 AM				57							312	204			442		**1015**
8:00 AM	to	8:15 AM				83							415	276			622		**1396**
8:15 AM	to	8:30 AM				109							532	349			807		**1797**
8:30 AM	to	8:45 AM				139							647	419			1000		**2205**
8:45 AM	to	9:00 AM				153							769	476			1163		**2561**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	14	0	0	0	0	0	0	57	38	0	0	82	0	**191**
7:15 AM	to	7:30 AM	0	0	0	12	0	0	0	0	0	0	62	47	0	0	81	0	**202**
7:30 AM	to	7:45 AM	0	0	0	15	0	0	0	0	0	0	89	50	0	0	118	0	**272**
7:45 AM	to	8:00 AM	0	0	0	16	0	0	0	0	0	0	104	69	0	0	161	0	**350**
8:00 AM	to	8:15 AM	0	0	0	26	0	0	0	0	0	0	103	72	0	0	180	0	**381**
8:15 AM	to	8:30 AM	0	0	0	26	0	0	0	0	0	0	117	73	0	0	185	0	**401**
8:30 AM	to	8:45 AM	0	0	0	30	0	0	0	0	0	0	115	70	0	0	193	0	**408**
8:45 AM	to	9:00 AM	0	0	0	14	0	0	0	0	0	0	122	57	0	0	163	0	**356**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	0	57	0	0	0	0	0	0	312	204	0	0	442	0	**1015**
7:15 AM	to	8:15 AM	0	0	0	69	0	0	0	0	0	0	358	238	0	0	540	0	**1205**
7:30 AM	to	8:30 AM	0	0	0	83	0	0	0	0	0	0	413	264	0	0	644	0	**1404**
7:45 AM	to	8:45 AM	0	0	0	98	0	0	0	0	0	0	439	284	0	0	719	0	**1540**
8:00 AM	to	9:00 AM	0	0	0	96	0	0	0	0	0	0	457	272	0	0	721	0	**1546**

PEAK HOUR SUMMARY

8:00 AM to 9:00 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	96	0	0	0	0	0	0	457	272	0	0	721	0	**1546**
PHF BY MOVEMENT	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.93	0.00	0.00	0.93	0.00	OVERALL
PHF BY APPROACH	0.80				0.00				0.96				0.93				0.95
BICYCLE	9				0				8				3				**20**
PEDESTRIAN	0				0				4				1				**5**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				5				0				0				**5**

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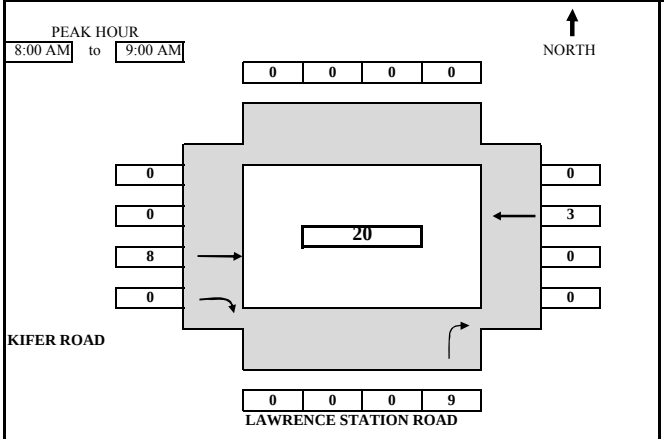
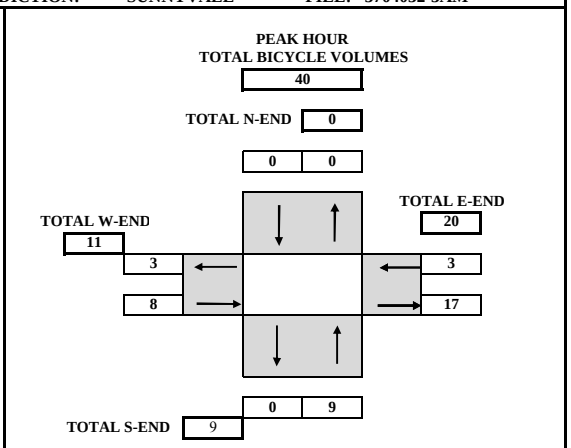
B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-3AM**





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
7:15 AM	to	7:30 AM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	**4**
7:30 AM	to	7:45 AM	0	0	0	4	0	0	0	0	0	0	2	0	0	0	2	0	**8**
7:45 AM	to	8:00 AM	0	0	0	7	0	0	0	0	0	0	3	0	0	0	2	0	**12**
8:00 AM	to	8:15 AM	0	0	0	12	0	0	0	0	0	0	4	0	0	0	3	0	**19**
8:15 AM	to	8:30 AM	0	0	0	13	0	0	0	0	0	0	4	0	0	0	4	0	**21**
8:30 AM	to	8:45 AM	0	0	0	13	0	0	0	0	0	0	10	0	0	0	4	0	**27**
8:45 AM	to	9:00 AM	0	0	0	16	0	0	0	0	0	0	11	0	0	0	5	0	**32**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
7:15 AM	to	7:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	**2**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	**4**
7:45 AM	to	8:00 AM	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	**4**
8:00 AM	to	8:15 AM	0	0	0	5	0	0	0	0	0	0	1	0	0	0	1	0	**7**
8:15 AM	to	8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	**2**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	**6**
8:45 AM	to	9:00 AM	0	0	0	3	0	0	0	0	0	0	1	0	0	0	1	0	**5**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	0	7	0	0	0	0	0	0	3	0	0	0	2	0	**12**
7:15 AM	to	8:15 AM	0	0	0	10	0	0	0	0	0	0	4	0	0	0	3	0	**17**
7:30 AM	to	8:30 AM	0	0	0	9	0	0	0	0	0	0	4	0	0	0	4	0	**17**
7:45 AM	to	8:45 AM	0	0	0	9	0	0	0	0	0	0	8	0	0	0	2	0	**19**
8:00 AM	to	9:00 AM	0	0	0	9	0	0	0	0	0	0	8	0	0	0	3	0	**20**

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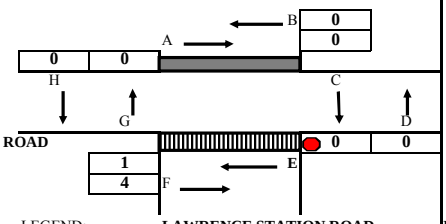
8:00 AM to 9:00 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	9	0	8	3	**20**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-3AM**

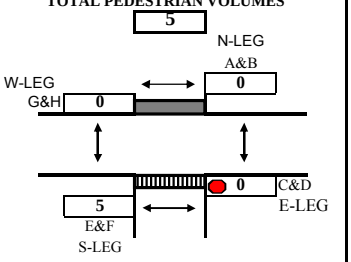
PEAK HOUR
08:00 AM TO 09:00 AM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE STATION ROAD

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**5**	**SB**(C+H)	**0**
E-LEG	**0**	**EB**(A+F)	**4**
W-LEG	**0**	**WB**(B+E)	**1**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	1	0	0	0	***1***
07:15 AM	---	07:30 AM	0	0	0	0	2	2	0	0	***4***
07:30 AM	---	07:45 AM	0	0	0	0	2	3	0	0	***5***
07:45 AM	---	08:00 AM	0	0	0	0	2	5	0	0	***7***
08:00 AM	---	08:15 AM	0	0	0	0	3	7	0	0	***10***
08:15 AM	---	08:30 AM	0	0	0	0	3	8	0	0	***11***
08:30 AM	---	08:45 AM	0	0	0	0	3	8	0	0	***11***
08:45 AM	---	09:00 AM	0	0	0	0	3	9	0	0	***12***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	1	0	0	0	***1***
07:15 AM	---	07:30 AM	0	0	0	0	1	2	0	0	***3***
07:30 AM	---	07:45 AM	0	0	0	0	0	1	0	0	***1***
07:45 AM	---	08:00 AM	0	0	0	0	0	2	0	0	***2***
08:00 AM	---	08:15 AM	0	0	0	0	1	2	0	0	***3***
08:15 AM	---	08:30 AM	0	0	0	0	0	1	0	0	***1***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	1	0	0	***1***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	2	5	0	0	***7***
07:15 AM	---	08:15 AM	0	0	0	0	2	7	0	0	***9***
07:30 AM	---	08:30 AM	0	0	0	0	1	6	0	0	***7***
07:45 AM	---	08:45 AM	0	0	0	0	1	5	0	0	***6***
08:00 AM	---	09:00 AM	0	0	0	0	1	4	0	0	***5***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

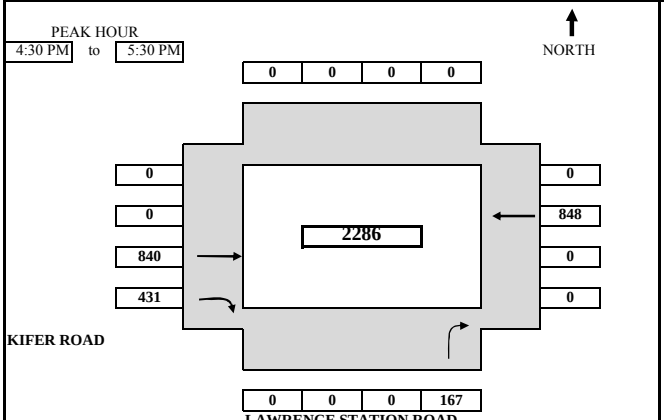
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	4	1	**5**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	5	0	0	**5**

B.A.Y.M.E.T.R.I.C.S.

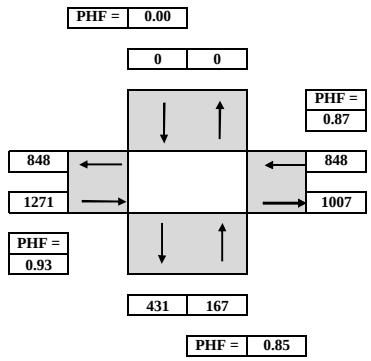
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-3PM**

PEAK HOUR
4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM				32							246	113			173		**564**
4:15 PM	to	4:30 PM				70							385	219			348		**1022**
4:30 PM	to	4:45 PM				113							614	330			525		**1582**
4:45 PM	to	5:00 PM				162							819	435			711		**2127**
5:00 PM	to	5:15 PM				194							1056	536			952		**2738**
5:15 PM	to	5:30 PM				237							1225	650			1196		**3308**
5:30 PM	to	5:45 PM				266							1394	758			1368		**3786**
5:45 PM	to	6:00 PM				290							1558	889			1586		**4323**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	32	0	0	0	0	0	0	246	113	0	0	173	0	**564**
4:15 PM	to	4:30 PM	0	0	0	38	0	0	0	0	0	0	139	106	0	0	175	0	**458**
4:30 PM	to	4:45 PM	0	0	0	43	0	0	0	0	0	0	229	111	0	0	177	0	**560**
4:45 PM	to	5:00 PM	0	0	0	49	0	0	0	0	0	0	205	105	0	0	186	0	**545**
5:00 PM	to	5:15 PM	0	0	0	32	0	0	0	0	0	0	237	101	0	0	241	0	**611**
5:15 PM	to	5:30 PM	0	0	0	43	0	0	0	0	0	0	169	114	0	0	244	0	**570**
5:30 PM	to	5:45 PM	0	0	0	29	0	0	0	0	0	0	169	108	0	0	172	0	**478**
5:45 PM	to	6:00 PM	0	0	0	24	0	0	0	0	0	0	164	131	0	0	218	0	**537**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	162	0	0	0	0	0	0	819	435	0	0	711	0	**2127**
4:15 PM	to	5:15 PM	0	0	0	162	0	0	0	0	0	0	810	423	0	0	779	0	**2174**
4:30 PM	to	5:30 PM	0	0	0	167	0	0	0	0	0	0	840	431	0	0	848	0	**2286**
4:45 PM	to	5:45 PM	0	0	0	153	0	0	0	0	0	0	780	428	0	0	843	0	**2204**
5:00 PM	to	6:00 PM	0	0	0	128	0	0	0	0	0	0	739	454	0	0	875	0	**2196**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	167	0	0	0	0	0	0	840	431	0	0	848	0	**2286**
PHF BY MOVEMENT	0.00	0.00	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.95	0.00	0.00	0.87	0.00	OVERALL
PHF BY APPROACH	0.85				0.00				0.93				0.87				0.94
BICYCLE	0				0				4				7				**11**
PEDESTRIAN	0				0				1				3				**4**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				4				0				0				**4**

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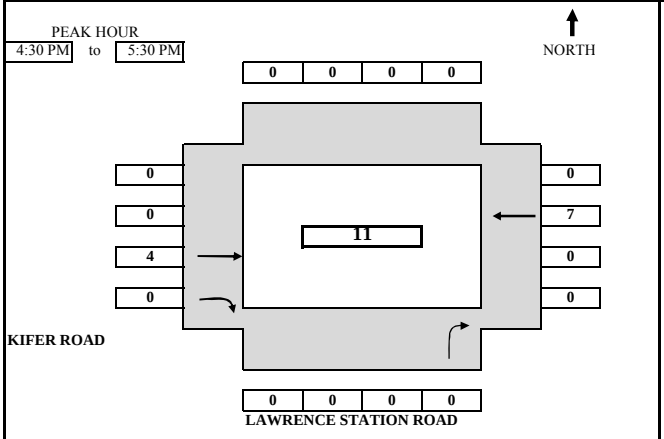
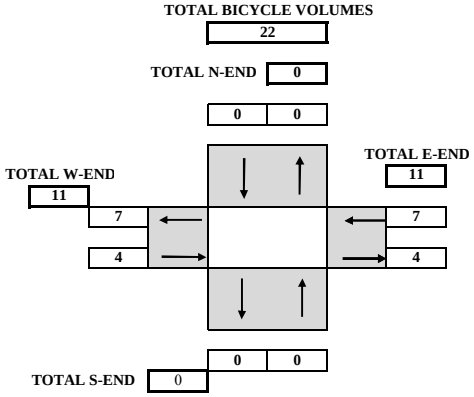
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-3PM**





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	**3**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	1	0	**6**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	2	0	**7**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	6	0	**11**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	5	2	0	0	7	0	**14**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	5	4	0	0	8	0	**17**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	5	4	0	0	11	0	**20**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	**2**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	**3**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	**4**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	**3**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	**3**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	**3**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	2	0	**7**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	6	0	**10**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	**11**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	7	0	**11**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	2	2	0	0	9	0	**13**

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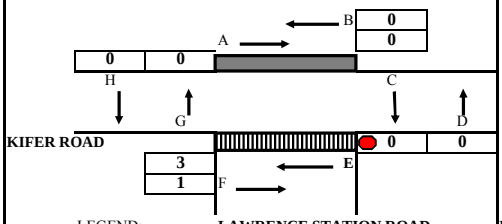
4:30 PM to 5:30 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	0	0	4	7	**11**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-3PM**

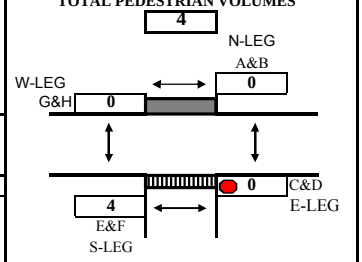
PEAK HOUR
04:30 PM TO 05:30 PM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE STATION ROAD

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**4**	**SB**(C+H)	**0**
E-LEG	**0**	**EB**(A+F)	**1**
W-LEG	**0**	**WB**(B+E)	**3**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	1	1	0	0	***2***
04:15 PM	---	04:30 PM	0	0	0	0	2	1	0	0	***3***
04:30 PM	---	04:45 PM	0	0	0	0	4	2	0	0	***6***
04:45 PM	---	05:00 PM	0	0	0	0	4	2	0	0	***6***
05:00 PM	---	05:15 PM	0	0	0	0	4	2	0	0	***6***
05:15 PM	---	05:30 PM	0	0	0	0	5	2	0	0	***7***
05:30 PM	---	05:45 PM	0	0	0	0	7	2	0	0	***9***
05:45 PM	---	06:00 PM	0	0	0	0	7	2	0	0	***9***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	1	1	0	0	***2***
04:15 PM	---	04:30 PM	0	0	0	0	1	0	0	0	***1***
04:30 PM	---	04:45 PM	0	0	0	0	2	1	0	0	***3***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	1	0	0	0	***1***
05:30 PM	---	05:45 PM	0	0	0	0	2	0	0	0	***2***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	4	2	0	0	***6***
04:15 PM	---	05:15 PM	0	0	0	0	3	1	0	0	***4***
04:30 PM	---	05:30 PM	0	0	0	0	3	1	0	0	***4***
04:45 PM	---	05:45 PM	0	0	0	0	3	0	0	0	***3***
05:00 PM	---	06:00 PM	0	0	0	0	3	0	0	0	***3***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

12:00 AM to 12:00 AM

VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	1	3	**4**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	4	0	0	**4**

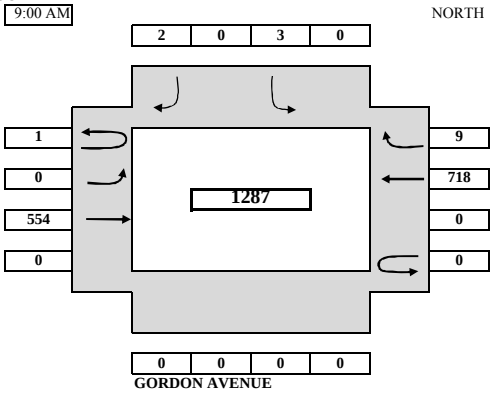
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

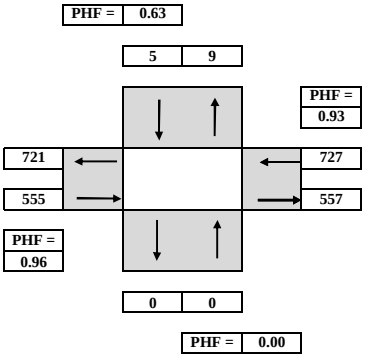
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**GORDON AVENUE**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-4AM**

PEAK HOUR
8:00 AM to 9:00 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM					0		0		0	0	73				81	0	**154**
7:15 AM	7:30 AM					0		0		0	0	145				164	0	**309**
7:30 AM	7:45 AM					0		0		0	0	252				281	0	**533**
7:45 AM	8:00 AM					0		0		1	0	368				442	1	**812**
8:00 AM	8:15 AM					1		1		1	0	499				621	3	**1126**
8:15 AM	8:30 AM					1		1		1	0	641				806	5	**1455**
8:30 AM	8:45 AM					2		2		2	0	784				998	8	**1796**
8:45 AM	9:00 AM					3		2		2	0	922				1160	10	**2099**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	0	0	0	0	0	0	0	0	73	0	0	0	81	0	**154**
7:15 AM	7:30 AM	0	0	0	0	0	0	0	0	0	0	72	0	0	0	83	0	**155**
7:30 AM	7:45 AM	0	0	0	0	0	0	0	0	0	0	107	0	0	0	117	0	**224**
7:45 AM	8:00 AM	0	0	0	0	0	0	0	0	1	0	116	0	0	0	161	1	**279**
8:00 AM	8:15 AM	0	0	0	0	0	1	0	1	0	0	131	0	0	0	179	2	**314**
8:15 AM	8:30 AM	0	0	0	0	0	0	0	0	0	0	142	0	0	0	185	2	**329**
8:30 AM	8:45 AM	0	0	0	0	0	1	0	1	1	0	143	0	0	0	192	3	**341**
8:45 AM	9:00 AM	0	0	0	0	0	1	0	0	0	0	138	0	0	0	162	2	**303**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	0	0	0	0	0	0	0	1	0	368	0	0	0	442	1	**812**
7:15 AM	8:15 AM	0	0	0	0	0	1	0	1	1	0	426	0	0	0	540	3	**972**
7:30 AM	8:30 AM	0	0	0	0	0	1	0	1	1	0	496	0	0	0	642	5	**1146**
7:45 AM	8:45 AM	0	0	0	0	0	2	0	2	2	0	532	0	0	0	717	8	**1263**
8:00 AM	9:00 AM	0	0	0	0	0	3	0	2	1	0	554	0	0	0	718	9	**1287**

PEAK HOUR SUMMARY

8:00 AM to 9:00 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	0	0	3	0	2	1	0	554	0	0	0	718	9	**1287**
PHF BY MOVEMENT	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.50	0.25	0.00	0.97	0.00	0.00	0.00	0.93	0.75	OVERALL
PHF BY APPROACH	0.00				0.63				0.96				0.93				0.94
BICYCLE	0				0				15				3				**18**
PEDESTRIAN	0				0				1				0				**1**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	1				0				0				0				**1**

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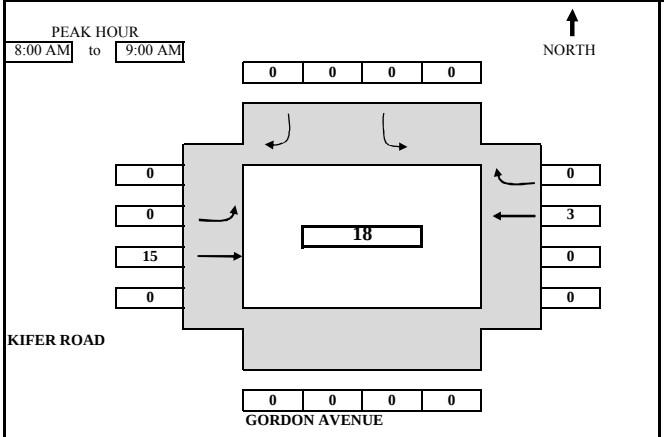
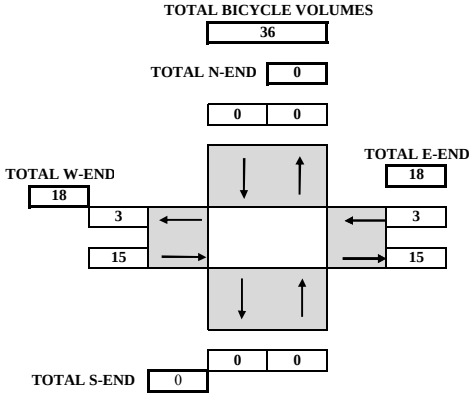
B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**GORDON AVENUE**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-4AM**

PEAK HOUR
8:00 AM to 9:00 AM





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**4**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2	0	**8**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	2	0	**12**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	15	0	0	0	4	0	**19**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	17	0	0	0	4	0	**21**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	21	0	0	0	5	0	**26**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	25	0	0	0	5	0	**30**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	**4**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**4**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	**7**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	**5**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	**4**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	2	0	**12**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	13	0	0	0	4	0	**17**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	13	0	0	0	4	0	**17**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	15	0	0	0	3	0	**18**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	15	0	0	0	3	0	**18**

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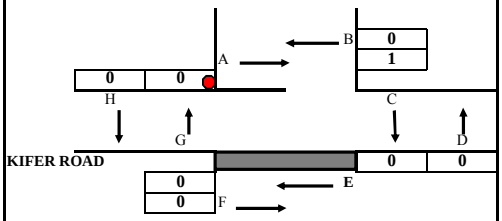
8:00 AM to 9:00 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	0	0	15	3	**18**

B.A.Y.M.E.T.R.I.C.S.

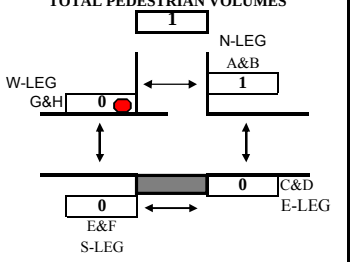
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**GORDON AVENUE**	**DAY:**	**TUESDAY**
E-W APPROACH	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-4AM**

PEAK HOUR
08:00 AM TO 09:00 AM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND: **GORDON AVENUE**
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

BY LEG:		**BY DIRECTION:**	
N-LEG	**1**	**NB**(D+G)	**0**
S-LEG	**0**	**SB**(C+H)	**0**
E-LEG	**0**	**EB**(A+F)	**1**
W-LEG	**0**	**WB**(B+E)	**0**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	1	1	0	0	0	0	0	0	***2***
07:15 AM	---	07:30 AM	1	2	0	0	0	0	0	0	***3***
07:30 AM	---	07:45 AM	1	2	0	0	0	0	0	0	***3***
07:45 AM	---	08:00 AM	1	2	0	0	0	0	0	0	***3***
08:00 AM	---	08:15 AM	1	2	0	0	0	0	0	0	***3***
08:15 AM	---	08:30 AM	2	2	0	0	0	0	0	0	***4***
08:30 AM	---	08:45 AM	2	2	0	0	0	0	0	0	***4***
08:45 AM	---	09:00 AM	2	2	0	0	0	0	0	0	***4***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	1	1	0	0	0	0	0	0	***2***
07:15 AM	---	07:30 AM	0	1	0	0	0	0	0	0	***1***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	1	0	0	0	0	0	0	0	***1***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	1	2	0	0	0	0	0	0	***3***
07:15 AM	---	08:15 AM	0	1	0	0	0	0	0	0	***1***
07:30 AM	---	08:30 AM	1	0	0	0	0	0	0	0	***1***
07:45 AM	---	08:45 AM	1	0	0	0	0	0	0	0	***1***
08:00 AM	---	09:00 AM	1	0	0	0	0	0	0	0	***1***

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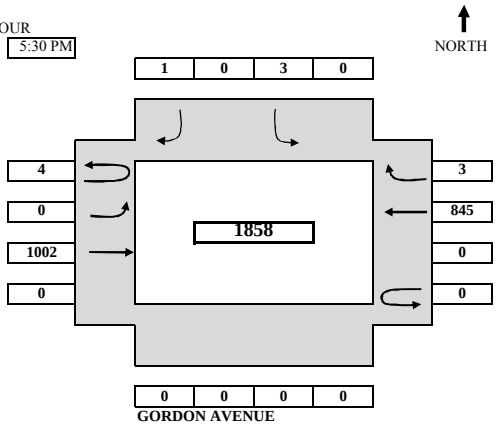
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	1	0	**1**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	1	0	0	0	**1**

B.A.Y.M.E.T.R.I.C.S.

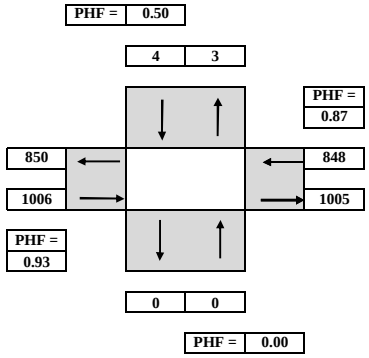
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**GORDON AVENUE**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-4PM**

PEAK HOUR
4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM						0		1	2		275				173	1	**452**
4:15 PM	to	4:30 PM						1		2	3		451				347	2	**806**
4:30 PM	to	4:45 PM						3		2	5		720				522	2	**1254**
4:45 PM	to	5:00 PM						3		3	5		974				708	3	**1696**
5:00 PM	to	5:15 PM						3		3	6		1242				949	5	**2208**
5:15 PM	to	5:30 PM						4		3	7		1453				1192	5	**2664**
5:30 PM	to	5:45 PM						4		3	7		1652				1367	5	**3038**
5:45 PM	to	6:00 PM						4		3	7		1839				1582	5	**3440**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	1	2	0	275	0	0	0	173	1	**452**
4:15 PM	to	4:30 PM	0	0	0	0	0	1	0	1	1	0	176	0	0	0	174	1	**354**
4:30 PM	to	4:45 PM	0	0	0	0	0	2	0	0	2	0	269	0	0	0	175	0	**448**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	1	0	0	254	0	0	0	186	1	**442**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	1	0	268	0	0	0	241	2	**512**
5:15 PM	to	5:30 PM	0	0	0	0	0	1	0	0	1	0	211	0	0	0	243	0	**456**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	199	0	0	0	175	0	**374**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	187	0	0	0	215	0	**402**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	0	0	3	0	3	5	0	974	0	0	0	708	3	**1696**
4:15 PM	to	5:15 PM	0	0	0	0	0	3	0	2	4	0	967	0	0	0	776	4	**1756**
4:30 PM	to	5:30 PM	0	0	0	0	0	3	0	1	4	0	1002	0	0	0	845	3	**1858**
4:45 PM	to	5:45 PM	0	0	0	0	0	1	0	1	2	0	932	0	0	0	845	3	**1784**
5:00 PM	to	6:00 PM	0	0	0	0	0	1	0	0	2	0	865	0	0	0	874	2	**1744**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	0	0	0	3	0	1	4	0	1002	0	0	0	845	3	**1858**
PHF BY MOVEMENT	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.25	0.50	0.00	0.93	0.00	0.00	0.00	0.87	0.38	OVERALL
PHF BY APPROACH	0.00				0.50				0.93				0.87				0.91
BICYCLE	0				0				3				8				**11**
PEDESTRIAN	0				0				0				3				**3**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	3				0				0				0				**3**

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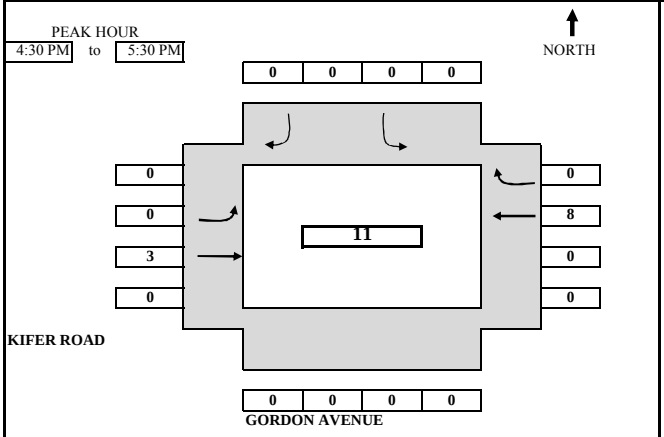
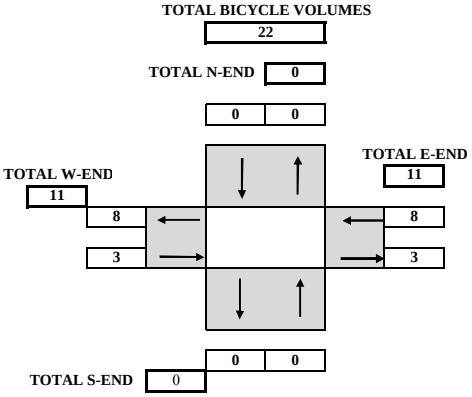
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**GORDON AVENUE**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-4PM**

PEAK HOUR
4:30 PM to 5:30 PM





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	**2**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	**3**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	**9**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	**12**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	9	0	**14**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	11	0	**16**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	**1**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	**6**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	**3**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	**2**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	**2**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	**3**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	**9**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	8	0	**11**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	**12**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	9	0	**13**

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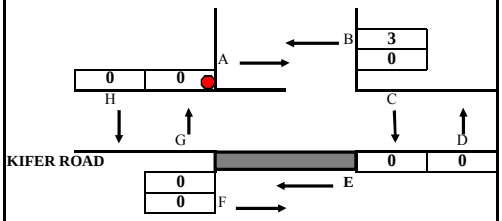
4:30 PM to 5:30 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	0	0	3	8	**11**

B.A.Y.M.E.T.R.I.C.S.

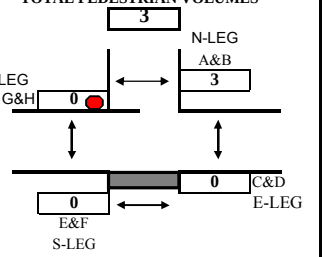
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**GORDON AVENUE**	**DAY:**	**TUESDAY**
E-W APPROACH	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-4PM**

PEAK HOUR
04:30 PM TO 05:30 PM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

GORDON AVENUE

BY LEG:		**BY DIRECTION:**	
N-LEG	3	**NB**(D+G)	0
S-LEG	0	**SB**(C+H)	0
E-LEG	0	**EB**(A+F)	0
W-LEG	0	**WB**(B+E)	3

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	3	0	0	0	0	0	0	***3***
04:15 PM	---	04:30 PM	1	3	0	0	0	0	0	0	***4***
04:30 PM	---	04:45 PM	1	4	0	0	0	0	0	0	***5***
04:45 PM	---	05:00 PM	1	5	0	0	0	0	0	0	***6***
05:00 PM	---	05:15 PM	1	6	0	0	0	0	0	0	***7***
05:15 PM	---	05:30 PM	1	6	0	0	0	0	0	0	***7***
05:30 PM	---	05:45 PM	1	6	0	0	0	0	0	0	***7***
05:45 PM	---	06:00 PM	1	6	0	0	0	0	0	0	***7***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	3	0	0	0	0	0	0	***3***
04:15 PM	---	04:30 PM	1	0	0	0	0	0	0	0	***1***
04:30 PM	---	04:45 PM	0	1	0	0	0	0	0	0	***1***
04:45 PM	---	05:00 PM	0	1	0	0	0	0	0	0	***1***
05:00 PM	---	05:15 PM	0	1	0	0	0	0	0	0	***1***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	1	5	0	0	0	0	0	0	***6***
04:15 PM	---	05:15 PM	1	3	0	0	0	0	0	0	***4***
04:30 PM	---	05:30 PM	0	3	0	0	0	0	0	0	***3***
04:45 PM	---	05:45 PM	0	2	0	0	0	0	0	0	***2***
05:00 PM	---	06:00 PM	0	1	0	0	0	0	0	0	***1***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	3	**3**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	3	0	0	0	**3**

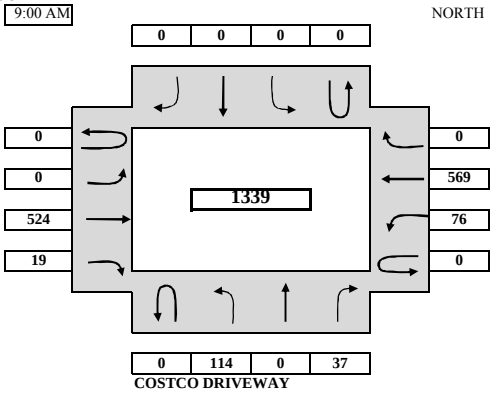
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

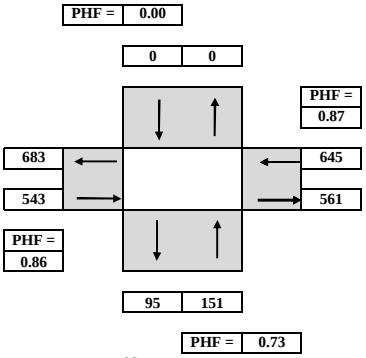
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**6/6/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**COSTCO DRIVEWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-(4a)AM**

PEAK HOUR
8:00 AM to 9:00 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND (Fence Closed) U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		25		7							73	2		17	51		**175**
7:15 AM	7:30 AM		47		15							163	8		28	120		**381**
7:30 AM	7:45 AM		68		31							241	11		43	211		**605**
7:45 AM	8:00 AM		90		35							342	13		57	352		**889**
8:00 AM	8:15 AM		118		44							463	15		79	468		**1187**
8:15 AM	8:30 AM		137		53							598	21		92	592		**1493**
8:30 AM	8:45 AM		181		61							711	29		119	751		**1852**
8:45 AM	9:00 AM		204		72							866	32		133	921		**2228**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	25	0	7	0	0	0	0	0	0	73	2	0	17	51	0	**175**
7:15 AM	7:30 AM	0	22	0	8	0	0	0	0	0	0	90	6	0	11	69	0	**206**
7:30 AM	7:45 AM	0	21	0	16	0	0	0	0	0	0	78	3	0	15	91	0	**224**
7:45 AM	8:00 AM	0	22	0	4	0	0	0	0	0	0	101	2	0	14	141	0	**284**
8:00 AM	8:15 AM	0	28	0	9	0	0	0	0	0	0	121	2	0	22	116	0	**298**
8:15 AM	8:30 AM	0	19	0	9	0	0	0	0	0	0	135	6	0	13	124	0	**306**
8:30 AM	8:45 AM	0	44	0	8	0	0	0	0	0	0	113	8	0	27	159	0	**359**
8:45 AM	9:00 AM	0	23	0	11	0	0	0	0	0	0	155	3	0	14	170	0	**376**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	90	0	35	0	0	0	0	0	0	342	13	0	57	352	0	**889**
7:15 AM	8:15 AM	0	93	0	37	0	0	0	0	0	0	390	13	0	62	417	0	**1012**
7:30 AM	8:30 AM	0	90	0	38	0	0	0	0	0	0	435	13	0	64	472	0	**1112**
7:45 AM	8:45 AM	0	113	0	30	0	0	0	0	0	0	470	18	0	76	540	0	**1247**
8:00 AM	9:00 AM	0	114	0	37	0	0	0	0	0	0	524	19	0	76	569	0	**1339**

PEAK HOUR SUMMARY

8:00 AM to 9:00 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	114	0	37	0	0	0	0	0	0	524	19	0	76	569	0	**1339**
PHF BY MOVEMENT	0.00	0.65	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.85	0.59	0.00	0.70	0.84	0.00	OVERALL
PHF BY APPROACH	0.73				0.00				0.86				0.87				0.89
BICYCLE	22				0				18				2				**42**
PEDESTRIAN	0				0				2				1				**3**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				3				0				0				**3**

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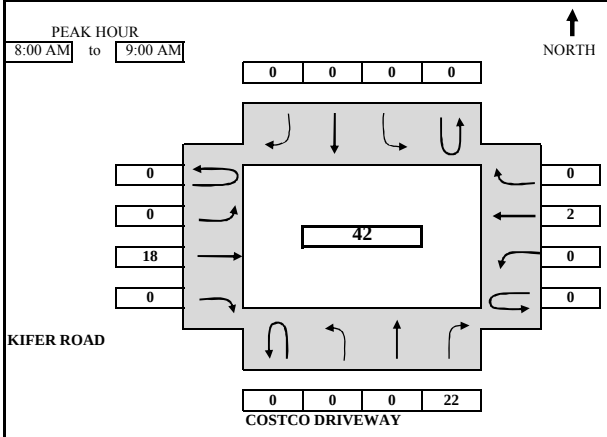
B.A.Y.M.E.T.R.I.C.S.

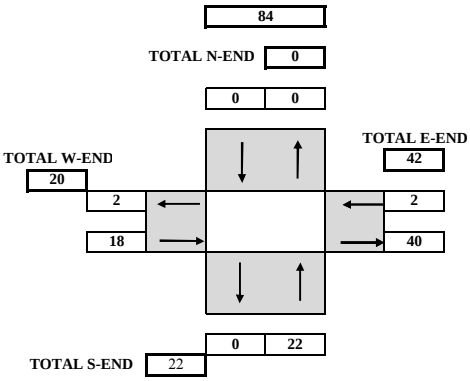
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**6/6/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**COSTCO DRIVEWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-(4a)AM**

PEAK HOUR
8:00 AM to 9:00 AM



PEAK HOUR
TOTAL BICYCLE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	**4**
7:15 AM	to	7:30 AM	0	0	0	3	0	0	0	0	0	0	3	0	0	0	1	0	**7**
7:30 AM	to	7:45 AM	0	0	0	3	0	0	0	0	0	0	6	0	0	0	3	0	**12**
7:45 AM	to	8:00 AM	0	0	0	8	0	0	0	0	0	0	10	0	0	0	3	0	**21**
8:00 AM	to	8:15 AM	0	0	0	23	0	0	0	0	0	0	16	0	0	0	3	0	**42**
8:15 AM	to	8:30 AM	0	0	0	23	0	0	0	0	0	0	21	0	0	0	3	0	**47**
8:30 AM	to	8:45 AM	0	0	0	23	0	0	0	0	0	0	23	0	0	0	3	0	**49**
8:45 AM	to	9:00 AM	0	0	0	30	0	0	0	0	0	0	28	0	0	0	5	0	**63**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	**4**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	**3**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	**5**
7:45 AM	to	8:00 AM	0	0	0	5	0	0	0	0	0	0	4	0	0	0	0	0	**9**
8:00 AM	to	8:15 AM	0	0	0	15	0	0	0	0	0	0	6	0	0	0	0	0	**21**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	**5**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	**2**
8:45 AM	to	9:00 AM	0	0	0	7	0	0	0	0	0	0	5	0	0	0	2	0	**14**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	0	8	0	0	0	0	0	0	10	0	0	0	3	0	**21**
7:15 AM	to	8:15 AM	0	0	0	20	0	0	0	0	0	0	15	0	0	0	3	0	**38**
7:30 AM	to	8:30 AM	0	0	0	20	0	0	0	0	0	0	18	0	0	0	2	0	**40**
7:45 AM	to	8:45 AM	0	0	0	20	0	0	0	0	0	0	17	0	0	0	0	0	**37**
8:00 AM	to	9:00 AM	0	0	0	22	0	0	0	0	0	0	18	0	0	0	2	0	**42**

TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

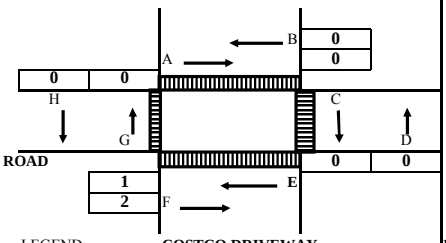
8:00 AM to 9:00 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	22	0	18	2	**42**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

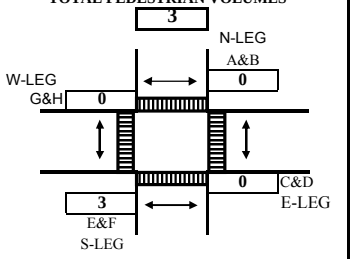
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**6/6/2017**
N-S APPROACH:	**COSTCO DRIVEWAY**	**DAY:**	**TUESDAY**
E-W APPROACH	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-(4a)AM**

PEAK HOUR
08:00 AM TO 09:00 AM



LEGEND:
- COSTCO DRIVEWAY
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**3**	**SB**(C+H)	**0**
E-LEG	**0**	**EB**(A+F)	**2**
W-LEG	**0**	**WB**(B+E)	**1**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	2	0	0	***2***
07:45 AM	---	08:00 AM	0	0	0	0	0	4	0	0	***4***
08:00 AM	---	08:15 AM	0	0	0	0	0	5	0	0	***5***
08:15 AM	---	08:30 AM	0	0	0	0	0	5	0	0	***5***
08:30 AM	---	08:45 AM	0	0	0	0	1	5	0	0	***6***
08:45 AM	---	09:00 AM	0	0	0	0	1	6	0	0	***7***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	2	0	0	***2***
07:45 AM	---	08:00 AM	0	0	0	0	0	2	0	0	***2***
08:00 AM	---	08:15 AM	0	0	0	0	0	1	0	0	***1***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	1	0	0	0	***1***
08:45 AM	---	09:00 AM	0	0	0	0	0	1	0	0	***1***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	0	4	0	0	***4***
07:15 AM	---	08:15 AM	0	0	0	0	0	5	0	0	***5***
07:30 AM	---	08:30 AM	0	0	0	0	0	5	0	0	***5***
07:45 AM	---	08:45 AM	0	0	0	0	1	3	0	0	***4***
08:00 AM	---	09:00 AM	0	0	0	0	1	2	0	0	***3***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	2	1	**3**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	3	0	0	**3**

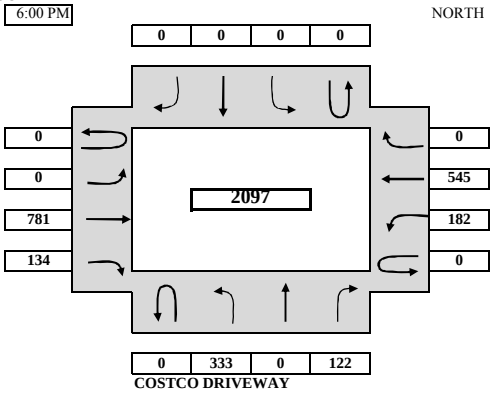
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

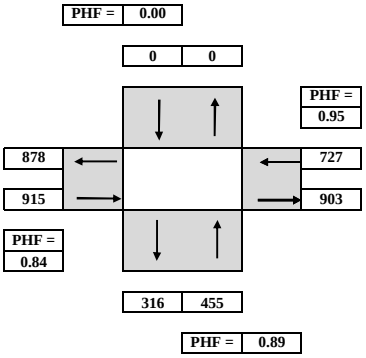
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**6/6/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**COSTCO DRIVEWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-(4a)PM**

PEAK HOUR
5:00 PM to 6:00 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND (Fence Closed) U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM		67		30							178	40		38	98		**451**
4:15 PM	to	4:30 PM		139		50							416	66		70	190		**931**
4:30 PM	to	4:45 PM		199		72							569	101		96	276		**1313**
4:45 PM	to	5:00 PM		279		105							793	140		137	398		**1852**
5:00 PM	to	5:15 PM		354		138							969	168		179	532		**2340**
5:15 PM	to	5:30 PM		454		162							1197	211		213	681		**2918**
5:30 PM	to	5:45 PM		520		191							1358	232		262	809		**3372**
5:45 PM	to	6:00 PM		612		227							1574	274		319	943		**3949**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	67	0	30	0	0	0	0	0	0	178	40	0	38	98	0	**451**
4:15 PM	to	4:30 PM	0	72	0	20	0	0	0	0	0	0	238	26	0	32	92	0	**480**
4:30 PM	to	4:45 PM	0	60	0	22	0	0	0	0	0	0	153	35	0	26	86	0	**382**
4:45 PM	to	5:00 PM	0	80	0	33	0	0	0	0	0	0	224	39	0	41	122	0	**539**
5:00 PM	to	5:15 PM	0	75	0	33	0	0	0	0	0	0	176	28	0	42	134	0	**488**
5:15 PM	to	5:30 PM	0	100	0	24	0	0	0	0	0	0	228	43	0	34	149	0	**578**
5:30 PM	to	5:45 PM	0	66	0	29	0	0	0	0	0	0	161	21	0	49	128	0	**454**
5:45 PM	to	6:00 PM	0	92	0	36	0	0	0	0	0	0	216	42	0	57	134	0	**577**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	279	0	105	0	0	0	0	0	0	793	140	0	137	398	0	**1852**
4:15 PM	to	5:15 PM	0	287	0	108	0	0	0	0	0	0	791	128	0	141	434	0	**1889**
4:30 PM	to	5:30 PM	0	315	0	112	0	0	0	0	0	0	781	145	0	143	491	0	**1987**
4:45 PM	to	5:45 PM	0	321	0	119	0	0	0	0	0	0	789	131	0	166	533	0	**2059**
5:00 PM	to	6:00 PM	0	333	0	122	0	0	0	0	0	0	781	134	0	182	545	0	**2097**

PEAK HOUR SUMMARY

5:00 PM to 6:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	333	0	122	0	0	0	0	0	0	781	134	0	182	545	0	**2097**
PHF BY MOVEMENT	0.00	0.83	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.00	0.86	0.78	0.00	0.80	0.91	0.00	OVERALL
PHF BY APPROACH	0.89				0.00				0.84				0.95				0.91
BICYCLE	3				0				5				27				**35**
PEDESTRIAN	0				3				3				13				**19**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				16				0				3				**19**

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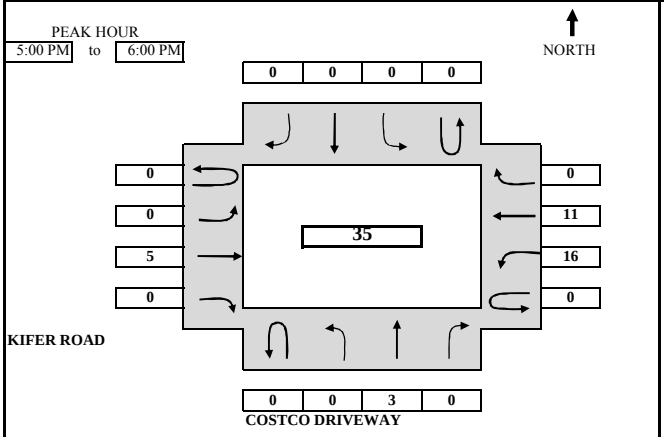
B.A.Y.M.E.T.R.I.C.S.

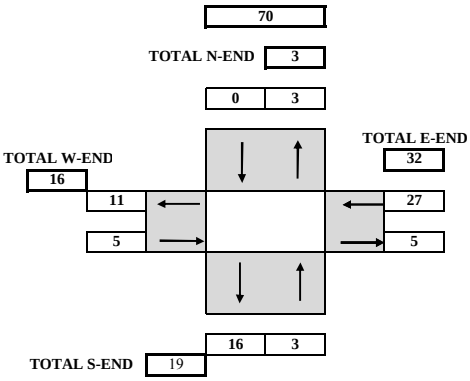
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**6/6/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**COSTCO DRIVEWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-(4a)PM**

PEAK HOUR
5:00 PM to 6:00 PM



PEAK HOUR
TOTAL BICYCLE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	**3**
4:30 PM	to	4:45 PM	0	0	1	0	0	0	0	0	0	0	1	0	0	3	2	0	**7**
4:45 PM	to	5:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	3	4	0	**10**
5:00 PM	to	5:15 PM	0	0	1	0	0	0	0	0	0	0	3	0	0	5	4	0	**13**
5:15 PM	to	5:30 PM	0	0	4	0	0	0	0	0	0	0	4	0	0	9	8	0	**25**
5:30 PM	to	5:45 PM	0	0	4	0	0	0	0	0	0	0	7	0	0	18	13	0	**42**
5:45 PM	to	6:00 PM	0	0	4	0	0	0	0	0	0	0	7	0	0	19	15	0	**45**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	**3**
4:30 PM	to	4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	1	0	**4**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	**3**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	**3**
5:15 PM	to	5:30 PM	0	0	3	0	0	0	0	0	0	0	1	0	0	4	4	0	**12**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	9	5	0	**17**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	**3**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	3	4	0	**10**
4:15 PM	to	5:15 PM	0	0	1	0	0	0	0	0	0	0	3	0	0	5	4	0	**13**
4:30 PM	to	5:30 PM	0	0	4	0	0	0	0	0	0	0	3	0	0	8	7	0	**22**
4:45 PM	to	5:45 PM	0	0	3	0	0	0	0	0	0	0	6	0	0	15	11	0	**35**
5:00 PM	to	6:00 PM	0	0	3	0	0	0	0	0	0	0	5	0	0	16	11	0	**35**

TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

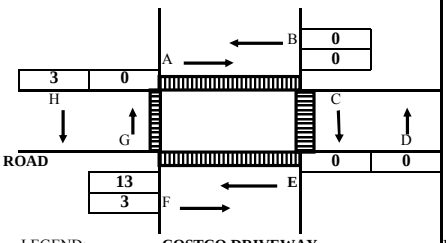
5:00 PM to 6:00 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	3	0	5	27	**35**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

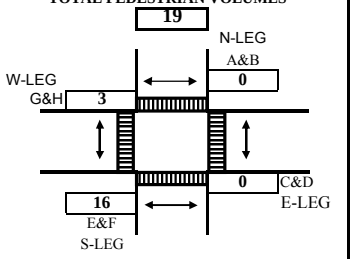
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**6/6/2017**
N-S APPROACH:	**COSTCO DRIVEWAY**	**DAY:**	**TUESDAY**
E-W APPROACH	**KIFER ROAD**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-(4a)PM**

PEAK HOUR
05:00 PM TO 06:00 PM



LEGEND:
- COSTCO DRIVEWAY
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**16**	**SB**(C+H)	**3**
E-LEG	**0**	**EB**(A+F)	**3**
W-LEG	**3**	**WB**(B+E)	**13**

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	2	0	0	0	***2***
04:30 PM	---	04:45 PM	0	0	0	0	6	0	0	0	***6***
04:45 PM	---	05:00 PM	0	0	0	0	6	0	0	0	***6***
05:00 PM	---	05:15 PM	0	0	0	0	7	0	0	0	***7***
05:15 PM	---	05:30 PM	0	0	0	0	8	0	0	1	***9***
05:30 PM	---	05:45 PM	0	0	0	0	15	3	0	2	***20***
05:45 PM	---	06:00 PM	0	0	0	0	19	3	0	3	***25***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	2	0	0	0	***2***
04:30 PM	---	04:45 PM	0	0	0	0	4	0	0	0	***4***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	1	0	0	0	***1***
05:15 PM	---	05:30 PM	0	0	0	0	1	0	0	1	***2***
05:30 PM	---	05:45 PM	0	0	0	0	7	3	0	1	***11***
05:45 PM	---	06:00 PM	0	0	0	0	4	0	0	1	***5***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	6	0	0	0	***6***
04:15 PM	---	05:15 PM	0	0	0	0	7	0	0	0	***7***
04:30 PM	---	05:30 PM	0	0	0	0	6	0	0	1	***7***
04:45 PM	---	05:45 PM	0	0	0	0	9	3	0	2	***14***
05:00 PM	---	06:00 PM	0	0	0	0	13	3	0	3	***19***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

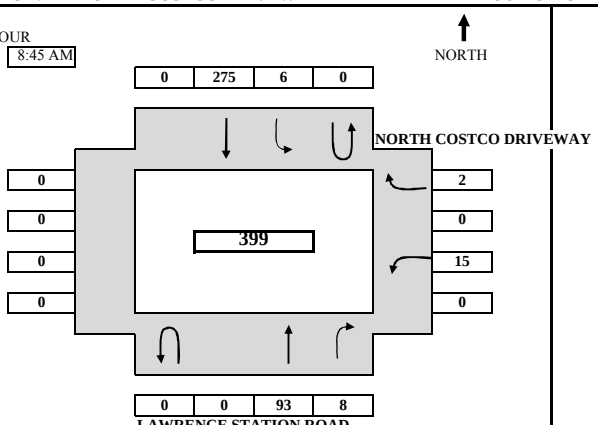
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	3	3	13	**19**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	16	0	3	**19**

B.A.Y.M.E.T.R.I.C.S.

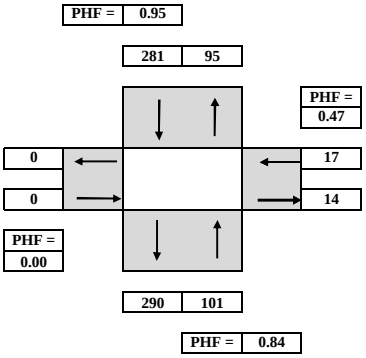
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**NORTH COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-5AM**

PEAK HOUR
7:45 AM to 8:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM			15	4		3	43							2		0	**67**
7:15 AM	to	7:30 AM			28	8		4	92							5		0	**137**
7:30 AM	to	7:45 AM			43	10		4	139							6		0	**202**
7:45 AM	to	8:00 AM			60	10		5	211							10		0	**296**
8:00 AM	to	8:15 AM			83	14		6	276							17		2	**398**
8:15 AM	to	8:30 AM			109	15		7	349							19		2	**501**
8:30 AM	to	8:45 AM			136	18		10	414							21		2	**601**
8:45 AM	to	9:00 AM			155	22		13	471							24		2	**687**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	15	4	0	3	43	0	0	0	0	0	0	2	0	0	**67**
7:15 AM	to	7:30 AM	0	0	13	4	0	1	49	0	0	0	0	0	0	3	0	0	**70**
7:30 AM	to	7:45 AM	0	0	15	2	0	0	47	0	0	0	0	0	0	1	0	0	**65**
7:45 AM	to	8:00 AM	0	0	17	0	0	1	72	0	0	0	0	0	0	4	0	0	**94**
8:00 AM	to	8:15 AM	0	0	23	4	0	1	65	0	0	0	0	0	0	7	0	2	**102**
8:15 AM	to	8:30 AM	0	0	26	1	0	1	73	0	0	0	0	0	0	2	0	0	**103**
8:30 AM	to	8:45 AM	0	0	27	3	0	3	65	0	0	0	0	0	0	2	0	0	**100**
8:45 AM	to	9:00 AM	0	0	19	4	0	3	57	0	0	0	0	0	0	3	0	0	**86**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	60	10	0	5	211	0	0	0	0	0	0	10	0	0	**296**
7:15 AM	to	8:15 AM	0	0	68	10	0	3	233	0	0	0	0	0	0	15	0	2	**331**
7:30 AM	to	8:30 AM	0	0	81	7	0	3	257	0	0	0	0	0	0	14	0	2	**364**
7:45 AM	to	8:45 AM	0	0	93	8	0	6	275	0	0	0	0	0	0	15	0	2	**399**
8:00 AM	to	9:00 AM	0	0	95	12	0	8	260	0	0	0	0	0	0	14	0	2	**391**

PEAK HOUR SUMMARY

7:45 AM to 8:45 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	93	8	0	6	275	0	0	0	0	0	0	15	0	2	**399**
PHF BY MOVEMENT	0.00	0.00	0.86	0.50	0.00	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00	0.25	OVERALL
PHF BY APPROACH	0.84				0.95				0.00				0.47				0.97
BICYCLE	24				3				0				0				**27**
PEDESTRIAN	6				3				0				0				**9**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				0				9				0				**9**

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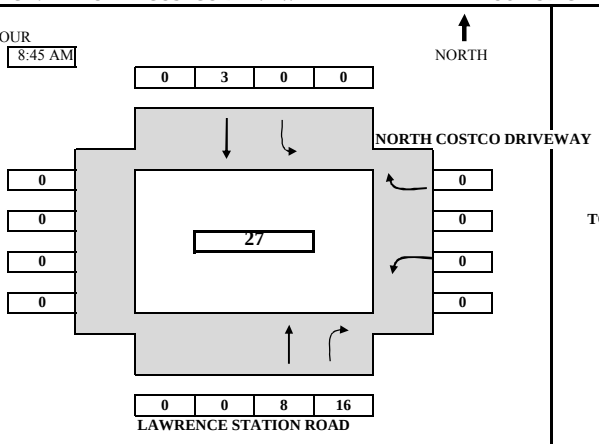
B.A.Y.M.E.T.R.I.C.S.

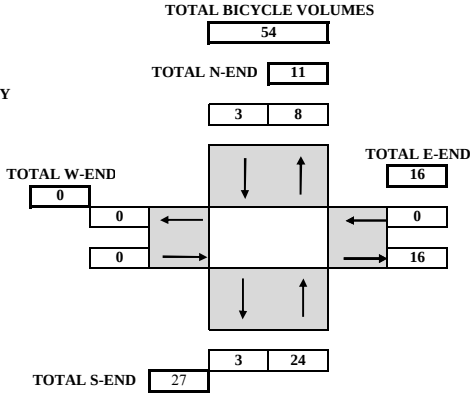
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**NORTH COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-5AM**

PEAK HOUR
7:45 AM to 8:45 AM



PEAK HOUR
TOTAL BICYCLE VOLUMES
54



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:15 AM	to	7:30 AM	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	**6**
7:30 AM	to	7:45 AM	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	**9**
7:45 AM	to	8:00 AM	0	0	7	10	0	0	0	0	0	0	0	0	0	0	0	0	**17**
8:00 AM	to	8:15 AM	0	0	11	20	0	0	1	0	0	0	0	0	0	0	0	0	**32**
8:15 AM	to	8:30 AM	0	0	12	20	0	0	3	0	0	0	0	0	0	0	0	0	**35**
8:30 AM	to	8:45 AM	0	0	12	21	0	0	3	0	0	0	0	0	0	0	0	0	**36**
8:45 AM	to	9:00 AM	0	0	19	24	0	0	3	0	0	0	0	0	0	0	0	0	**46**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:15 AM	to	7:30 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:30 AM	to	7:45 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:45 AM	to	8:00 AM	0	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	**8**
8:00 AM	to	8:15 AM	0	0	4	10	0	0	1	0	0	0	0	0	0	0	0	0	**15**
8:15 AM	to	8:30 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	**3**
8:30 AM	to	8:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**1**
8:45 AM	to	9:00 AM	0	0	7	3	0	0	0	0	0	0	0	0	0	0	0	0	**10**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	7	10	0	0	0	0	0	0	0	0	0	0	0	0	**17**
7:15 AM	to	8:15 AM	0	0	10	18	0	0	1	0	0	0	0	0	0	0	0	0	**29**
7:30 AM	to	8:30 AM	0	0	8	18	0	0	3	0	0	0	0	0	0	0	0	0	**29**
7:45 AM	to	8:45 AM	0	0	8	16	0	0	3	0	0	0	0	0	0	0	0	0	**27**
8:00 AM	to	9:00 AM	0	0	12	14	0	0	3	0	0	0	0	0	0	0	0	0	**29**

TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

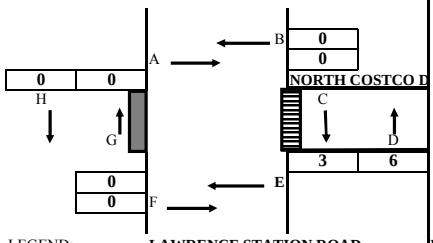
7:45 AM to 8:45 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	24	3	0	0	**27**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH	**NORTH COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-5AM**

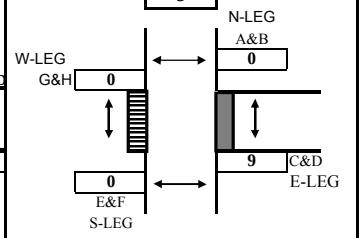
PEAK HOUR
07:45 AM TO 08:45 AM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE STATION ROAD

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES
9



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**6**
S-LEG	**0**	**SB**(C+H)	**3**
E-LEG	**9**	**EB**(A+F)	**0**
W-LEG	**0**	**WB**(B+E)	**0**

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	1	0	0	0	0	***1***
07:15 AM	---	07:30 AM	0	0	0	2	0	0	0	0	***2***
07:30 AM	---	07:45 AM	0	0	0	3	0	0	0	0	***3***
07:45 AM	---	08:00 AM	0	0	1	4	0	0	0	0	***5***
08:00 AM	---	08:15 AM	0	0	1	6	0	0	0	0	***7***
08:15 AM	---	08:30 AM	0	0	1	8	0	0	0	0	***9***
08:30 AM	---	08:45 AM	0	0	3	9	0	0	0	0	***12***
08:45 AM	---	09:00 AM	0	0	3	10	0	0	0	0	***13***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	1	0	0	0	0	***1***
07:15 AM	---	07:30 AM	0	0	0	1	0	0	0	0	***1***
07:30 AM	---	07:45 AM	0	0	0	1	0	0	0	0	***1***
07:45 AM	---	08:00 AM	0	0	1	1	0	0	0	0	***2***
08:00 AM	---	08:15 AM	0	0	0	2	0	0	0	0	***2***
08:15 AM	---	08:30 AM	0	0	0	2	0	0	0	0	***2***
08:30 AM	---	08:45 AM	0	0	2	1	0	0	0	0	***3***
08:45 AM	---	09:00 AM	0	0	0	1	0	0	0	0	***1***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	1	4	0	0	0	0	***5***
07:15 AM	---	08:15 AM	0	0	1	5	0	0	0	0	***6***
07:30 AM	---	08:30 AM	0	0	1	6	0	0	0	0	***7***
07:45 AM	---	08:45 AM	0	0	3	6	0	0	0	0	***9***
08:00 AM	---	09:00 AM	0	0	2	6	0	0	0	0	***8***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

12:00 AM to 12:00 AM

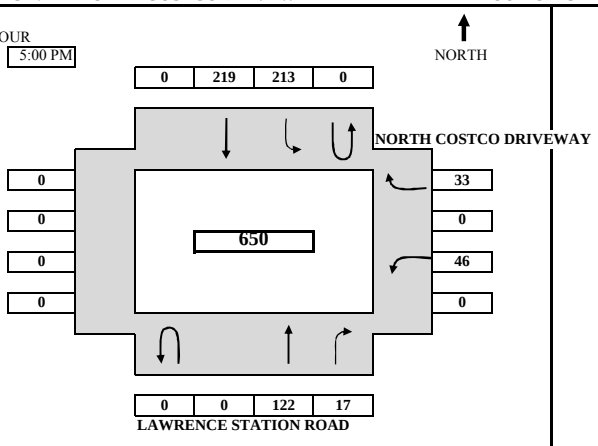
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	6	3	0	0	**9**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	9	0	**9**

B.A.Y.M.E.T.R.I.C.S.

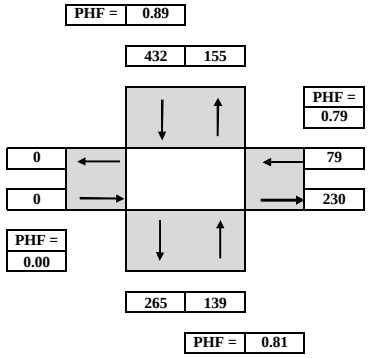
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**NORTH COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-5PM**

PEAK HOUR
4:00 PM to 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM			24	6	0	63	58							11		6	**168**
4:15 PM	to	4:30 PM			52	7	0	113	115							20		17	**324**
4:30 PM	to	4:45 PM			87	15	0	170	165							35		27	**499**
4:45 PM	to	5:00 PM			122	17	0	213	219							46		33	**650**
5:00 PM	to	5:15 PM			148	19	0	264	270							60		42	**803**
5:15 PM	to	5:30 PM			178	25	0	323	321							76		48	**971**
5:30 PM	to	5:45 PM			201	27	1	379	373							88		53	**1122**
5:45 PM	to	6:00 PM			219	30	1	458	405							93		59	**1265**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	24	6	0	63	58	0	0	0	0	0	0	11	0	6	**168**
4:15 PM	to	4:30 PM	0	0	28	1	0	50	57	0	0	0	0	0	0	9	0	11	**156**
4:30 PM	to	4:45 PM	0	0	35	8	0	57	50	0	0	0	0	0	0	15	0	10	**175**
4:45 PM	to	5:00 PM	0	0	35	2	0	43	54	0	0	0	0	0	0	11	0	6	**151**
5:00 PM	to	5:15 PM	0	0	26	2	0	51	51	0	0	0	0	0	0	14	0	9	**153**
5:15 PM	to	5:30 PM	0	0	30	6	0	59	51	0	0	0	0	0	0	16	0	6	**168**
5:30 PM	to	5:45 PM	0	0	23	2	1	56	52	0	0	0	0	0	0	12	0	5	**151**
5:45 PM	to	6:00 PM	0	0	18	3	0	79	32	0	0	0	0	0	0	5	0	6	**143**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	122	17	0	213	219	0	0	0	0	0	0	46	0	33	**650**
4:15 PM	to	5:15 PM	0	0	124	13	0	201	212	0	0	0	0	0	0	49	0	36	**635**
4:30 PM	to	5:30 PM	0	0	126	18	0	210	206	0	0	0	0	0	0	56	0	31	**647**
4:45 PM	to	5:45 PM	0	0	114	12	1	209	208	0	0	0	0	0	0	53	0	26	**623**
5:00 PM	to	6:00 PM	0	0	97	13	1	245	186	0	0	0	0	0	0	47	0	26	**615**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	122	17	0	213	219	0	0	0	0	0	0	46	0	33	**650**
PHF BY MOVEMENT	0.00	0.00	0.87	0.53	0.00	0.85	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.77	0.00	0.75	OVERALL
PHF BY APPROACH	0.81				0.89				0.00				0.79				0.93
BICYCLE	1				3				0				7				**11**
PEDESTRIAN	0				7				0				0				**7**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				0				7				0				**7**

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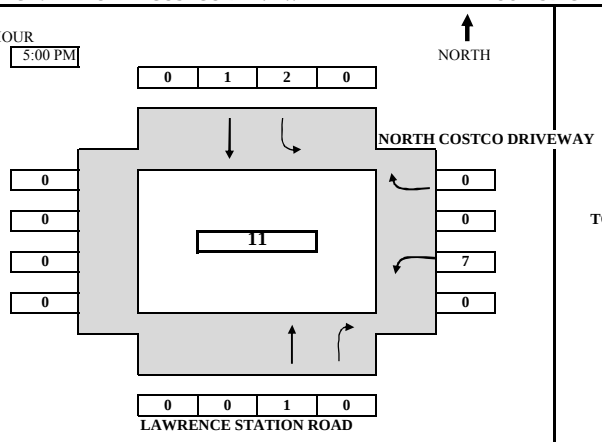
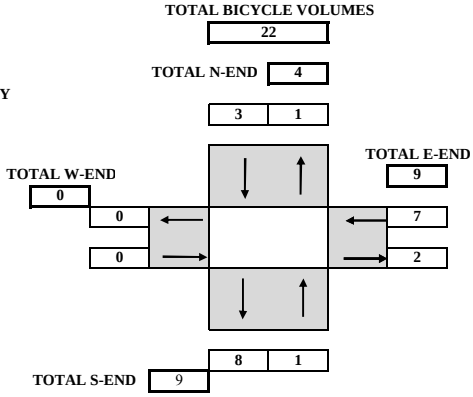
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**NORTH COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-5PM**

PEAK HOUR
4:00 PM to 5:00 PM



PEAK HOUR
TOTAL BICYCLE VOLUMES
22



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
4:15 PM	to	4:30 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	0	0	0	**4**
4:30 PM	to	4:45 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	3	0	0	**7**
4:45 PM	to	5:00 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	7	0	0	**11**
5:00 PM	to	5:15 PM	0	0	2	0	0	2	1	0	0	0	0	0	0	7	0	0	**12**
5:15 PM	to	5:30 PM	0	0	2	0	0	2	1	0	0	0	0	0	0	8	0	0	**13**
5:30 PM	to	5:45 PM	0	0	2	0	0	2	3	0	0	0	0	0	0	12	0	1	**20**
5:45 PM	to	6:00 PM	0	0	2	0	0	2	3	0	0	0	0	0	0	13	0	1	**21**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**
4:15 PM	to	4:30 PM	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	**3**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	**3**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	**4**
5:00 PM	to	5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0	1	**7**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	1	0	0	2	1	0	0	0	0	0	0	7	0	0	**11**
4:15 PM	to	5:15 PM	0	0	2	0	0	1	1	0	0	0	0	0	0	7	0	0	**11**
4:30 PM	to	5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	8	0	0	**9**
4:45 PM	to	5:45 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	9	0	1	**13**
5:00 PM	to	6:00 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	6	0	1	**10**

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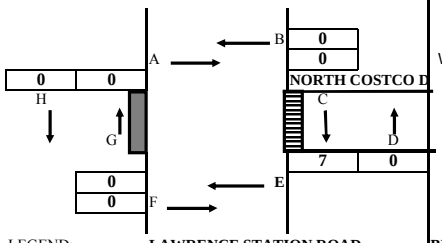
4:00 PM to 5:00 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	1	3	0	7	**11**

B.A.Y.M.E.T.R.I.C.S.

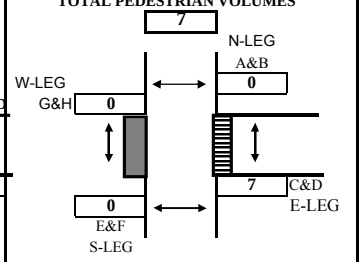
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH	**NORTH COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOI	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-5PM**

PEAK HOUR
04:00 PM TO 05:00 PM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE STATION ROAD

BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**0**
S-LEG	**0**	**SB**(C+H)	**7**
E-LEG	**7**	**EB**(A+F)	**0**
W-LEG	**0**	**WB**(B+E)	**0**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	2	0	0	0	0	0	***2***
04:15 PM	---	04:30 PM	0	0	3	0	0	0	0	0	***3***
04:30 PM	---	04:45 PM	0	0	6	0	0	0	0	0	***6***
04:45 PM	---	05:00 PM	0	0	7	0	0	0	0	0	***7***
05:00 PM	---	05:15 PM	0	0	9	0	0	0	0	0	***9***
05:15 PM	---	05:30 PM	0	0	9	0	0	0	0	0	***9***
05:30 PM	---	05:45 PM	0	0	16	1	0	0	0	0	***17***
05:45 PM	---	06:00 PM	0	0	18	1	0	0	0	0	***19***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	2	0	0	0	0	0	***2***
04:15 PM	---	04:30 PM	0	0	1	0	0	0	0	0	***1***
04:30 PM	---	04:45 PM	0	0	3	0	0	0	0	0	***3***
04:45 PM	---	05:00 PM	0	0	1	0	0	0	0	0	***1***
05:00 PM	---	05:15 PM	0	0	2	0	0	0	0	0	***2***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	7	1	0	0	0	0	***8***
05:45 PM	---	06:00 PM	0	0	2	0	0	0	0	0	***2***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	7	0	0	0	0	0	***7***
04:15 PM	---	05:15 PM	0	0	7	0	0	0	0	0	***7***
04:30 PM	---	05:30 PM	0	0	6	0	0	0	0	0	***6***
04:45 PM	---	05:45 PM	0	0	10	1	0	0	0	0	***11***
05:00 PM	---	06:00 PM	0	0	11	1	0	0	0	0	***12***

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12:00 AM to 12:00 AM

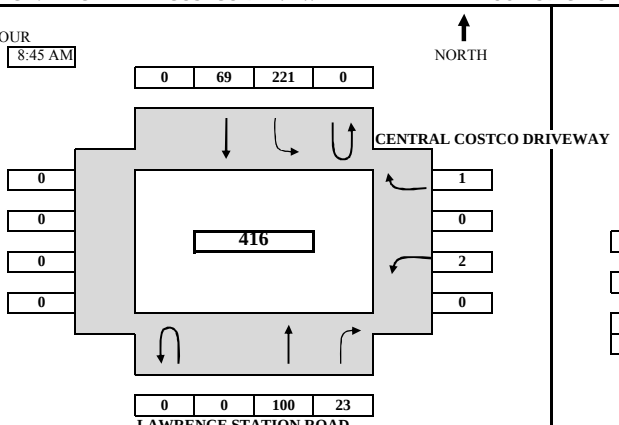
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	7	0	0	***7***
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	7	0	***7***

B.A.Y.M.E.T.R.I.C.S.

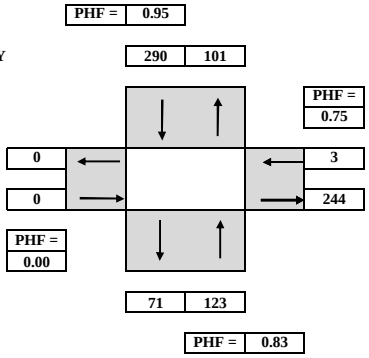
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**CENTRAL COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-2AM**

PEAK HOUR
7:45 AM to 8:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM			19	3		24	21							0		0	**67**
7:15 AM	to	7:30 AM			36	10		56	41							1		0	**144**
7:30 AM	to	7:45 AM			53	14		98	47							1		0	**213**
7:45 AM	to	8:00 AM			70	21		154	67							1		0	**313**
8:00 AM	to	8:15 AM			96	23		203	90							1		1	**414**
8:15 AM	to	8:30 AM			123	30		272	96							2		1	**524**
8:30 AM	to	8:45 AM			153	37		319	116							3		1	**629**
8:45 AM	to	9:00 AM			176	44		373	122							3		1	**719**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	19	3	0	24	21	0	0	0	0	0	0	0	0	0	**67**
7:15 AM	to	7:30 AM	0	0	17	7	0	32	20	0	0	0	0	0	0	1	0	0	**77**
7:30 AM	to	7:45 AM	0	0	17	4	0	42	6	0	0	0	0	0	0	0	0	0	**69**
7:45 AM	to	8:00 AM	0	0	17	7	0	56	20	0	0	0	0	0	0	0	0	0	**100**
8:00 AM	to	8:15 AM	0	0	26	2	0	49	23	0	0	0	0	0	0	0	0	1	**101**
8:15 AM	to	8:30 AM	0	0	27	7	0	69	6	0	0	0	0	0	0	1	0	0	**110**
8:30 AM	to	8:45 AM	0	0	30	7	0	47	20	0	0	0	0	0	0	1	0	0	**105**
8:45 AM	to	9:00 AM	0	0	23	7	0	54	6	0	0	0	0	0	0	0	0	0	**90**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	70	21	0	154	67	0	0	0	0	0	0	1	0	0	**313**
7:15 AM	to	8:15 AM	0	0	77	20	0	179	69	0	0	0	0	0	0	1	0	1	**347**
7:30 AM	to	8:30 AM	0	0	87	20	0	216	55	0	0	0	0	0	0	1	0	1	**380**
7:45 AM	to	8:45 AM	0	0	100	23	0	221	69	0	0	0	0	0	0	2	0	1	**416**
8:00 AM	to	9:00 AM	0	0	106	23	0	219	55	0	0	0	0	0	0	2	0	1	**406**

PEAK HOUR SUMMARY

7:45 AM to 8:45 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	100	23	0	221	69	0	0	0	0	0	0	2	0	1	**416**
PHF BY MOVEMENT	0.00	0.00	0.83	0.82	0.00	0.80	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.25	OVERALL
PHF BY APPROACH	0.83				0.95				0.00				0.75				0.95
BICYCLE	27				3				0				0				**30**
PEDESTRIAN	8				2				0				0				**10**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				0				10				0				**10**

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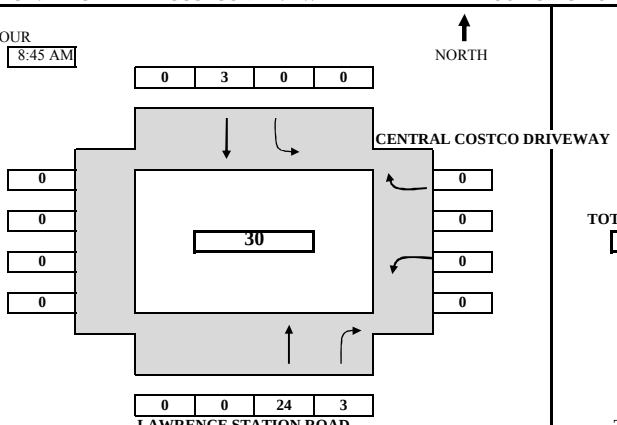
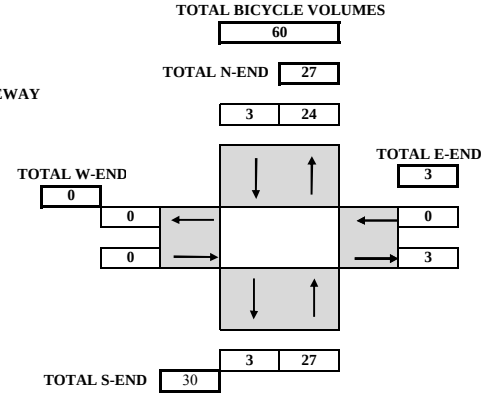
B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**CENTRAL COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-2AM**

PEAK HOUR
7:45 AM to 8:45 AM





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
7:15 AM	to	7:30 AM	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	**8**
7:30 AM	to	7:45 AM	0	0	9	2	0	0	0	0	0	0	0	0	0	0	0	0	**11**
7:45 AM	to	8:00 AM	0	0	16	3	0	0	0	0	0	0	0	0	0	0	0	0	**19**
8:00 AM	to	8:15 AM	0	0	31	3	0	0	1	0	0	0	0	0	0	0	0	0	**35**
8:15 AM	to	8:30 AM	0	0	32	3	0	0	3	0	0	0	0	0	0	0	0	0	**38**
8:30 AM	to	8:45 AM	0	0	33	5	0	0	3	0	0	0	0	0	0	0	0	0	**41**
8:45 AM	to	9:00 AM	0	0	44	5	0	0	3	0	0	0	0	0	0	0	0	0	**52**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
7:15 AM	to	7:30 AM	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:30 AM	to	7:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:45 AM	to	8:00 AM	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	**8**
8:00 AM	to	8:15 AM	0	0	15	0	0	0	1	0	0	0	0	0	0	0	0	0	**16**
8:15 AM	to	8:30 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	**3**
8:30 AM	to	8:45 AM	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	**3**
8:45 AM	to	9:00 AM	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	16	3	0	0	0	0	0	0	0	0	0	0	0	0	**19**
7:15 AM	to	8:15 AM	0	0	26	3	0	0	1	0	0	0	0	0	0	0	0	0	**30**
7:30 AM	to	8:30 AM	0	0	26	1	0	0	3	0	0	0	0	0	0	0	0	0	**30**
7:45 AM	to	8:45 AM	0	0	24	3	0	0	3	0	0	0	0	0	0	0	0	0	**30**
8:00 AM	to	9:00 AM	0	0	28	2	0	0	3	0	0	0	0	0	0	0	0	0	**33**

TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

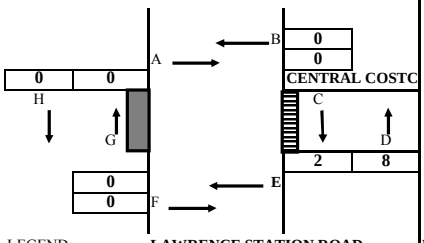
7:45 AM to 8:45 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	27	3	0	0	**30**

B.A.Y.M.E.T.R.I.C.S.

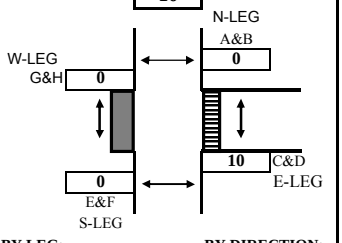
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH:	**CENTRAL COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-2AM**

PEAK HOUR
07:45 AM TO 08:45 AM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES
10



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE STATION ROAD

BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**8**
S-LEG	**0**	**SB**(C+H)	**2**
E-LEG	**10**	**EB**(A+F)	**0**
W-LEG	**0**	**WB**(B+E)	**0**

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	2	0	0	0	0	***2***
07:15 AM	---	07:30 AM	0	0	1	3	0	0	0	0	***4***
07:30 AM	---	07:45 AM	0	0	1	5	0	0	0	0	***6***
07:45 AM	---	08:00 AM	0	0	1	8	0	0	0	0	***9***
08:00 AM	---	08:15 AM	0	0	1	10	0	0	0	0	***11***
08:15 AM	---	08:30 AM	0	0	1	12	0	0	0	0	***13***
08:30 AM	---	08:45 AM	0	0	3	13	0	0	0	0	***16***
08:45 AM	---	09:00 AM	0	0	3	14	0	0	0	0	***17***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	2	0	0	0	0	***2***
07:15 AM	---	07:30 AM	0	0	1	1	0	0	0	0	***2***
07:30 AM	---	07:45 AM	0	0	0	2	0	0	0	0	***2***
07:45 AM	---	08:00 AM	0	0	0	3	0	0	0	0	***3***
08:00 AM	---	08:15 AM	0	0	0	2	0	0	0	0	***2***
08:15 AM	---	08:30 AM	0	0	0	2	0	0	0	0	***2***
08:30 AM	---	08:45 AM	0	0	2	1	0	0	0	0	***3***
08:45 AM	---	09:00 AM	0	0	0	1	0	0	0	0	***1***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	1	8	0	0	0	0	***9***
07:15 AM	---	08:15 AM	0	0	1	8	0	0	0	0	***9***
07:30 AM	---	08:30 AM	0	0	0	9	0	0	0	0	***9***
07:45 AM	---	08:45 AM	0	0	2	8	0	0	0	0	***10***
08:00 AM	---	09:00 AM	0	0	2	6	0	0	0	0	***8***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

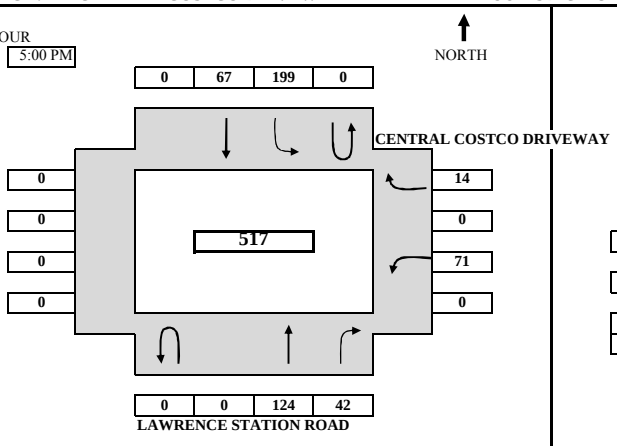
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	8	2	0	0	**10**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	10	0	**10**

B.A.Y.M.E.T.R.I.C.S.

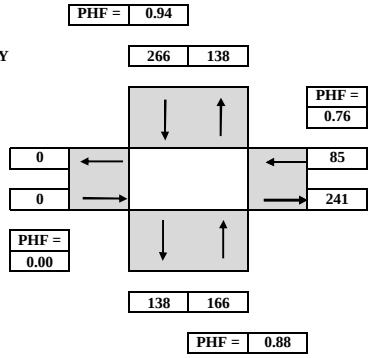
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**CENTRAL COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-6PM**

PEAK HOUR
4:00 PM to 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM			27	9		57	14							14		2	**123**
4:15 PM	to	4:30 PM			53	21		107	29							38		6	**254**
4:30 PM	to	4:45 PM			89	30		154	48							53		11	**385**
4:45 PM	to	5:00 PM			124	42		199	67							71		14	**517**
5:00 PM	to	5:15 PM			149	49		251	82							86		18	**635**
5:15 PM	to	5:30 PM			178	56		298	101							106		23	**762**
5:30 PM	to	5:45 PM			200	64		347	115							121		26	**873**
5:45 PM	to	6:00 PM			217	78		378	123							142		31	**969**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	27	9	0	57	14	0	0	0	0	0	0	14	0	2	**123**
4:15 PM	to	4:30 PM	0	0	26	12	0	50	15	0	0	0	0	0	0	24	0	4	**131**
4:30 PM	to	4:45 PM	0	0	36	9	0	47	19	0	0	0	0	0	0	15	0	5	**131**
4:45 PM	to	5:00 PM	0	0	35	12	0	45	19	0	0	0	0	0	0	18	0	3	**132**
5:00 PM	to	5:15 PM	0	0	25	7	0	52	15	0	0	0	0	0	0	15	0	4	**118**
5:15 PM	to	5:30 PM	0	0	29	7	0	47	19	0	0	0	0	0	0	20	0	5	**127**
5:30 PM	to	5:45 PM	0	0	22	8	0	49	14	0	0	0	0	0	0	15	0	3	**111**
5:45 PM	to	6:00 PM	0	0	17	14	0	31	8	0	0	0	0	0	0	21	0	5	**96**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	124	42	0	199	67	0	0	0	0	0	0	71	0	14	**517**
4:15 PM	to	5:15 PM	0	0	122	40	0	194	68	0	0	0	0	0	0	72	0	16	**512**
4:30 PM	to	5:30 PM	0	0	125	35	0	191	72	0	0	0	0	0	0	68	0	17	**508**
4:45 PM	to	5:45 PM	0	0	111	34	0	193	67	0	0	0	0	0	0	68	0	15	**488**
5:00 PM	to	6:00 PM	0	0	93	36	0	179	56	0	0	0	0	0	0	71	0	17	**452**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	0	124	42	0	199	67	0	0	0	0	0	0	71	0	14	**517**
PHF BY MOVEMENT	0.00	0.00	0.86	0.88	0.00	0.87	0.88	0.00	0.00	0.00	0.00	0.00	0.00	0.74	0.00	0.70	OVERALL
PHF BY APPROACH	0.88				0.94				0.00				0.76				0.98
BICYCLE	2				8				0				1				**11**
PEDESTRIAN	2				7				0				0				**9**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				0				9				0				**9**

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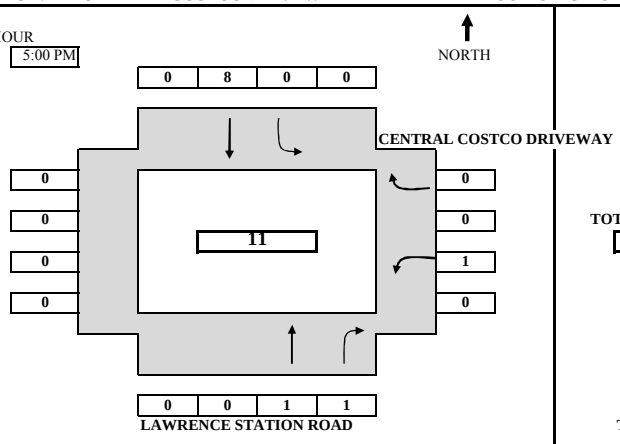
B.A.Y.M.E.T.R.I.C.S.

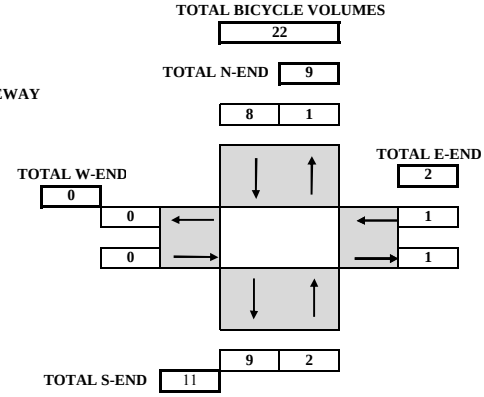
BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**CENTRAL COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-6PM**

PEAK HOUR
4:00 PM to 5:00 PM



PEAK HOUR
TOTAL BICYCLE VOLUMES
22



TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	**2**
4:30 PM	to	4:45 PM	0	0	1	1	0	0	4	0	0	0	0	0	0	1	0	0	**7**
4:45 PM	to	5:00 PM	0	0	1	1	0	0	8	0	0	0	0	0	0	1	0	0	**11**
5:00 PM	to	5:15 PM	0	0	2	1	0	0	8	0	0	0	0	0	0	1	0	0	**12**
5:15 PM	to	5:30 PM	0	0	2	1	0	0	9	0	0	0	0	0	0	1	0	0	**13**
5:30 PM	to	5:45 PM	0	0	2	1	0	0	15	0	0	0	0	0	0	2	0	0	**20**
5:45 PM	to	6:00 PM	0	0	2	1	0	0	15	0	0	0	0	0	0	2	0	0	**20**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	**2**
4:30 PM	to	4:45 PM	0	0	0	1	0	0	3	0	0	0	0	0	0	1	0	0	**5**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	**4**
5:00 PM	to	5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	6	0	0	0	0	0	0	1	0	0	**7**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	1	1	0	0	8	0	0	0	0	0	0	1	0	0	**11**
4:15 PM	to	5:15 PM	0	0	2	1	0	0	8	0	0	0	0	0	0	1	0	0	**12**
4:30 PM	to	5:30 PM	0	0	1	1	0	0	8	0	0	0	0	0	0	1	0	0	**11**
4:45 PM	to	5:45 PM	0	0	1	0	0	0	11	0	0	0	0	0	0	1	0	0	**13**
5:00 PM	to	6:00 PM	0	0	1	0	0	0	7	0	0	0	0	0	0	1	0	0	**9**

TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

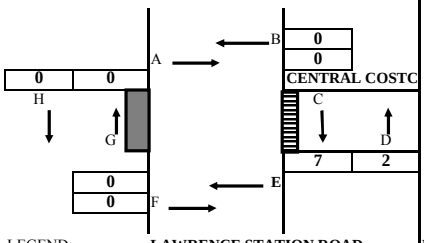
4:00 PM to 5:00 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	2	8	0	1	**11**

B.A.Y.M.E.T.R.I.C.S.

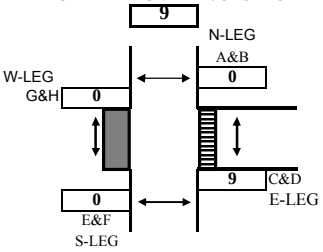
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH:	**CENTRAL COSTCO DRIVEWAY**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-6PM**

PEAK HOUR
04:00 PM TO 05:00 PM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES
9



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

LAWRENCE STATION ROAD

BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**2**
S-LEG	**0**	**SB**(C+H)	**7**
E-LEG	**9**	**EB**(A+F)	**0**
W-LEG	**0**	**WB**(B+E)	**0**

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	2	0	0	0	0	0	***2***
04:15 PM	---	04:30 PM	0	0	3	1	0	0	0	0	***4***
04:30 PM	---	04:45 PM	0	0	6	2	0	0	0	0	***8***
04:45 PM	---	05:00 PM	0	0	7	2	0	0	0	0	***9***
05:00 PM	---	05:15 PM	0	0	10	2	0	0	0	0	***12***
05:15 PM	---	05:30 PM	0	0	11	3	0	0	0	0	***14***
05:30 PM	---	05:45 PM	0	0	20	4	0	0	0	0	***24***
05:45 PM	---	06:00 PM	0	0	23	4	0	0	0	0	***27***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	2	0	0	0	0	0	***2***
04:15 PM	---	04:30 PM	0	0	1	1	0	0	0	0	***2***
04:30 PM	---	04:45 PM	0	0	3	1	0	0	0	0	***4***
04:45 PM	---	05:00 PM	0	0	1	0	0	0	0	0	***1***
05:00 PM	---	05:15 PM	0	0	3	0	0	0	0	0	***3***
05:15 PM	---	05:30 PM	0	0	1	1	0	0	0	0	***2***
05:30 PM	---	05:45 PM	0	0	9	1	0	0	0	0	***10***
05:45 PM	---	06:00 PM	0	0	3	0	0	0	0	0	***3***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	7	2	0	0	0	0	***9***
04:15 PM	---	05:15 PM	0	0	8	2	0	0	0	0	***10***
04:30 PM	---	05:30 PM	0	0	8	2	0	0	0	0	***10***
04:45 PM	---	05:45 PM	0	0	14	2	0	0	0	0	***16***
05:00 PM	---	06:00 PM	0	0	16	2	0	0	0	0	***18***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

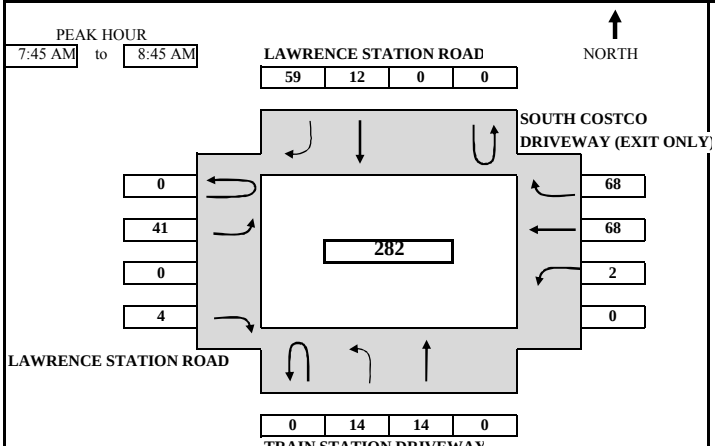
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	2	7	0	0	**9**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	9	0	**9**

B.A.Y.M.E.T.R.I.C.S.

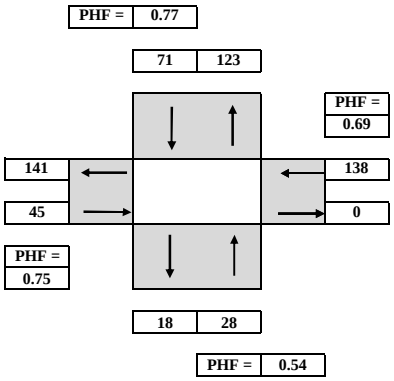
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN SUNNYVALE	SURVEY DATE:	5/9/2017	DAY:	TUESDAY
N-S APPROACH:	LAWRENCE STATION ROAD	SURVEY TIME:	7:00 AM	TO	9:00 AM
E-W APPROACH:	SOUTH COSTCO DRIVEWAY (EXIT ONLY)	JURISDICTION:	SUNNYVALE	FILE:	3704032-7AM

PEAK HOUR
7:45 AM to 8:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
7:00 AM	7:15 AM		0	0				0	21		7		0		0	14	15	**57**
7:15 AM	7:30 AM		2	2				2	40		21		1		0	29	23	**120**
7:30 AM	7:45 AM		4	2				3	45		29		2		0	46	36	**167**
7:45 AM	8:00 AM		5	4				8	60		41		2		0	59	46	**225**
8:00 AM	8:15 AM		8	9				11	80		51		3		0	75	59	**296**
8:15 AM	8:30 AM		10	11				12	86		57		4		0	99	85	**364**
8:30 AM	8:45 AM		18	16				15	104		70		6		2	114	104	**449**
8:45 AM	9:00 AM		19	18				15	110		84		6		2	127	118	**499**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	0	0	0	0	0	0	21	0	7	0	0	0	0	14	15	**57**
7:15 AM	7:30 AM	0	2	2	0	0	0	2	19	0	14	0	1	0	0	15	8	**63**
7:30 AM	7:45 AM	0	2	0	0	0	0	1	5	0	8	0	1	0	0	17	13	**47**
7:45 AM	8:00 AM	0	1	2	0	0	0	5	15	0	12	0	0	0	0	13	10	**58**
8:00 AM	8:15 AM	0	3	5	0	0	0	3	20	0	10	0	1	0	0	16	13	**71**
8:15 AM	8:30 AM	0	2	2	0	0	0	1	6	0	6	0	1	0	0	24	26	**68**
8:30 AM	8:45 AM	0	8	5	0	0	0	3	18	0	13	0	2	0	2	15	19	**85**
8:45 AM	9:00 AM	0	1	2	0	0	0	0	6	0	14	0	0	0	0	13	14	**50**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	5	4	0	0	0	8	60	0	41	0	2	0	0	59	46	**225**
7:15 AM	8:15 AM	0	8	9	0	0	0	11	59	0	44	0	3	0	0	61	44	**239**
7:30 AM	8:30 AM	0	8	9	0	0	0	10	46	0	36	0	3	0	0	70	62	**244**
7:45 AM	8:45 AM	0	14	14	0	0	0	12	59	0	41	0	4	0	2	68	68	**282**
8:00 AM	9:00 AM	0	14	14	0	0	0	7	50	0	43	0	4	0	2	68	72	**274**

PEAK HOUR SUMMARY

7:45 AM to 8:45 AM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	14	14	0	0	0	12	59	0	41	0	4	0	2	68	68	**282**
PHF BY MOVEMENT	0.00	0.44	0.70	0.00	0.00	0.00	0.60	0.74	0.00	0.79	0.00	0.50	0.00	0.25	0.71	0.65	OVERALL
PHF BY APPROACH	0.54				0.77				0.75				0.69				0.83
BICYCLE	29				3				0				1				**33**
PEDESTRIAN	10				2				2				1				**15**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				3				12				0				**15**

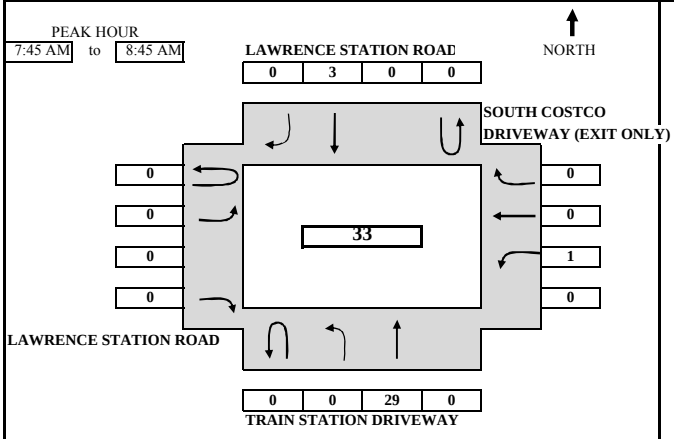
TEL: (510) 232 - 1271 EMAIL: BAYMETRICS@GMAIL.COM

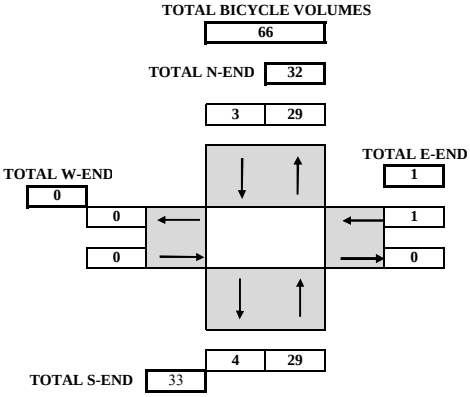
B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**SOUTH COSTCO DRIVEWAY (EXIT ONLY)**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-7AM**

PEAK HOUR
7:45 AM to 8:45 AM





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
7:15 AM	to	7:30 AM	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	**9**
7:30 AM	to	7:45 AM	0	0	11	0	0	0	0	0	0	0	0	0	0	1	0	0	**12**
7:45 AM	to	8:00 AM	0	0	20	0	0	0	0	0	0	0	0	0	0	2	0	0	**22**
8:00 AM	to	8:15 AM	0	0	34	0	0	0	1	0	0	0	0	0	0	2	0	0	**37**
8:15 AM	to	8:30 AM	0	0	36	0	0	0	3	0	0	0	0	0	0	2	0	0	**41**
8:30 AM	to	8:45 AM	0	0	40	0	0	0	3	0	0	0	0	0	0	2	0	0	**45**
8:45 AM	to	9:00 AM	0	0	50	0	0	0	3	0	0	0	0	0	0	4	0	0	**57**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
7:15 AM	to	7:30 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	**4**
7:30 AM	to	7:45 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
7:45 AM	to	8:00 AM	0	0	9	0	0	0	0	0	0	0	0	0	0	1	0	0	**10**
8:00 AM	to	8:15 AM	0	0	14	0	0	0	1	0	0	0	0	0	0	0	0	0	**15**
8:15 AM	to	8:30 AM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	**4**
8:30 AM	to	8:45 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
8:45 AM	to	9:00 AM	0	0	10	0	0	0	0	0	0	0	0	0	0	2	0	0	**12**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	20	0	0	0	0	0	0	0	0	0	0	2	0	0	**22**
7:15 AM	to	8:15 AM	0	0	29	0	0	0	1	0	0	0	0	0	0	2	0	0	**32**
7:30 AM	to	8:30 AM	0	0	28	0	0	0	3	0	0	0	0	0	0	1	0	0	**32**
7:45 AM	to	8:45 AM	0	0	29	0	0	0	3	0	0	0	0	0	0	1	0	0	**33**
8:00 AM	to	9:00 AM	0	0	30	0	0	0	3	0	0	0	0	0	0	2	0	0	**35**

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7:45 AM to 8:45 AM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	29	3	0	1	**33**

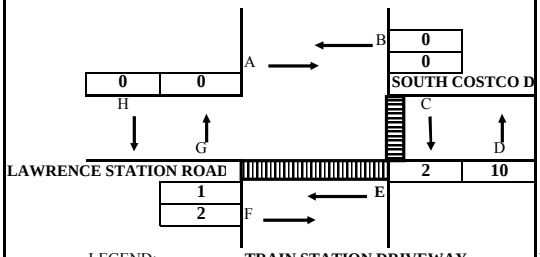
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH:	**SOUTH COSTCO DRIVEWAY (EXIT ONLY)**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3704032-7AM**

PEAK HOUR

07:45 AM TO 08:45 AM **LAWRENCE STATION ROAD**

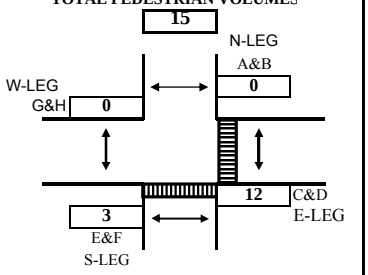


LEGEND:

- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

TRAIN STATION DRIVEWAY

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
N-LEG	**0**	**NB**(D+G)	**10**
S-LEG	**3**	**SB**(C+H)	**2**
E-LEG	**12**	**EB**(A+F)	**2**
W-LEG	**0**	**WB**(B+E)	**1**

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	4	0	2	0	0	***6***
07:15 AM	---	07:30 AM	0	0	1	4	0	2	0	0	***7***
07:30 AM	---	07:45 AM	0	0	3	7	1	3	0	0	***14***
07:45 AM	---	08:00 AM	0	0	3	9	1	3	0	0	***16***
08:00 AM	---	08:15 AM	0	0	3	12	1	4	0	0	***20***
08:15 AM	---	08:30 AM	0	0	4	15	1	5	0	0	***25***
08:30 AM	---	08:45 AM	0	0	5	17	2	5	0	0	***29***
08:45 AM	---	09:00 AM	0	0	5	18	2	5	0	0	***30***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	4	0	2	0	0	***6***
07:15 AM	---	07:30 AM	0	0	1	0	0	0	0	0	***1***
07:30 AM	---	07:45 AM	0	0	2	3	1	1	0	0	***7***
07:45 AM	---	08:00 AM	0	0	0	2	0	0	0	0	***2***
08:00 AM	---	08:15 AM	0	0	0	3	0	1	0	0	***4***
08:15 AM	---	08:30 AM	0	0	1	3	0	1	0	0	***5***
08:30 AM	---	08:45 AM	0	0	1	2	1	0	0	0	***4***
08:45 AM	---	09:00 AM	0	0	0	1	0	0	0	0	***1***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	3	9	1	3	0	0	***16***
07:15 AM	---	08:15 AM	0	0	3	8	1	2	0	0	***14***
07:30 AM	---	08:30 AM	0	0	3	11	1	3	0	0	***18***
07:45 AM	---	08:45 AM	0	0	2	10	1	2	0	0	***15***
08:00 AM	---	09:00 AM	0	0	2	9	1	2	0	0	***14***

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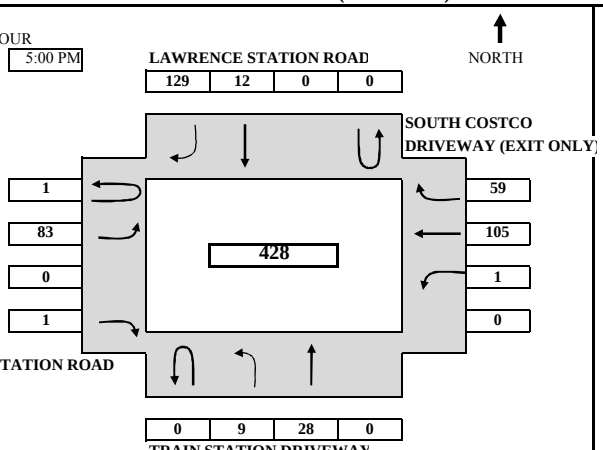
12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	10	2	2	1	**15**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	3	12	0	**15**

B.A.Y.M.E.T.R.I.C.S.

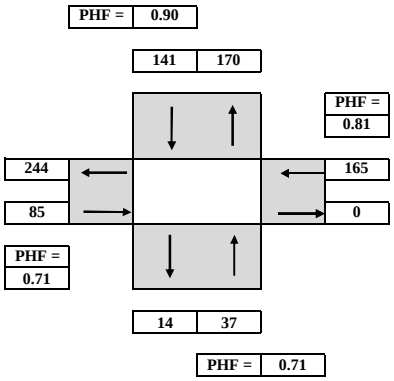
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN SUNNYVALE	SURVEY DATE:	5/9/2017	DAY:	TUESDAY
N-S APPROACH:	LAWRENCE STATION ROAD	SURVEY TIME:	4:00 PM	TO	6:00 PM
E-W APPROACH:	SOUTH COSTCO DRIVEWAY (EXIT ONLY)	JURISDICTION:	SUNNYVALE	FILE:	3704032-7PM

PEAK HOUR 4:00 PM to 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD From	To	NORTHBOUND U-TURN	LEFT	THRU	RIGHT	SOUTHBOUND U-TURN	LEFT	THRU	RIGHT	EASTBOUND U-TURN	LEFT	THRU	RIGHT	WESTBOUND U-TURN	LEFT	THRU	RIGHT	TOTAL
SURVEY DATA																		
4:00 PM	4:15 PM		1	8				4	27	0	17		1		0	38	13	**109**
4:15 PM	4:30 PM		5	11				7	63	1	46		1		0	61	15	**210**
4:30 PM	4:45 PM		6	18				9	97	1	63		1		0	84	43	**322**
4:45 PM	5:00 PM		9	28				12	129	1	83		1		1	105	59	**428**
5:00 PM	5:15 PM		9	31				13	162	1	101		1		1	131	75	**525**
5:15 PM	5:30 PM		9	37				15	193	1	120		2		1	148	82	**608**
5:30 PM	5:45 PM		11	39				18	225	1	137		2		1	183	94	**711**
5:45 PM	6:00 PM		13	43				19	251	1	155		2		2	199	101	**786**
TOTAL BY PERIOD																		
4:00 PM	4:15 PM	0	1	8	0	0	0	4	27	0	17	0	1	0	0	38	13	**109**
4:15 PM	4:30 PM	0	4	3	0	0	0	3	36	1	29	0	0	0	0	23	2	**101**
4:30 PM	4:45 PM	0	1	7	0	0	0	2	34	0	17	0	0	0	0	23	28	**112**
4:45 PM	5:00 PM	0	3	10	0	0	0	3	32	0	20	0	0	0	1	21	16	**106**
5:00 PM	5:15 PM	0	0	3	0	0	0	1	33	0	18	0	0	0	0	26	16	**97**
5:15 PM	5:30 PM	0	0	6	0	0	0	2	31	0	19	0	1	0	0	17	7	**83**
5:30 PM	5:45 PM	0	2	2	0	0	0	3	32	0	17	0	0	0	0	35	12	**103**
5:45 PM	6:00 PM	0	2	4	0	0	0	1	26	0	18	0	0	0	1	16	7	**75**
HOURLY TOTALS																		
4:00 PM	5:00 PM	0	9	28	0	0	0	12	129	1	83	0	1	0	1	105	59	**428**
4:15 PM	5:15 PM	0	8	23	0	0	0	9	135	1	84	0	0	0	1	93	62	**416**
4:30 PM	5:30 PM	0	4	26	0	0	0	8	130	0	74	0	1	0	1	87	67	**398**
4:45 PM	5:45 PM	0	5	21	0	0	0	9	128	0	74	0	1	0	1	99	51	**389**
5:00 PM	6:00 PM	0	4	15	0	0	0	7	122	0	72	0	1	0	1	94	42	**358**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND NBU	NBL	NBT	NBR	SOUTHBOUND SBU	SBL	SBT	SBR	EASTBOUND EBU	EBL	EBT	EBR	WESTBOUND WBU	WBL	WBT	WBR	TOTAL
VOLUME	0	9	28	0	0	0	12	129	1	83	0	1	0	1	105	59	**428**
PHF BY MOVEMENT	0.00	0.56	0.70	0.00	0.00	0.00	0.75	0.90	0.25	0.72	0.00	0.25	0.00	0.25	0.69	0.53	OVERALL
PHF BY APPROACH	0.71				0.90				0.71				0.81				0.96
BICYCLE	3				11				0				9				**23**
PEDESTRIAN	4				24				3				5				**36**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				8				28				0				**36**

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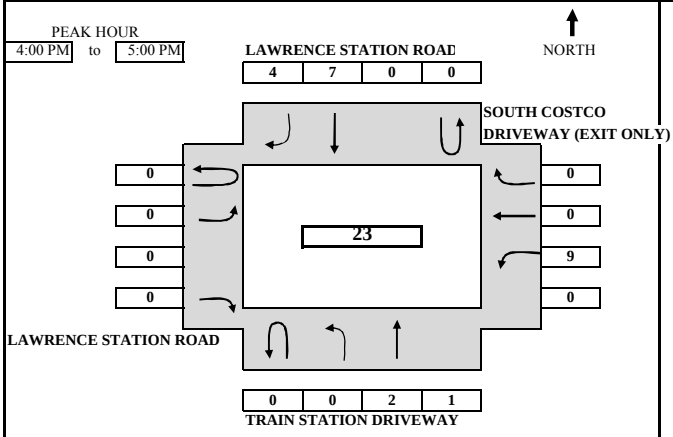
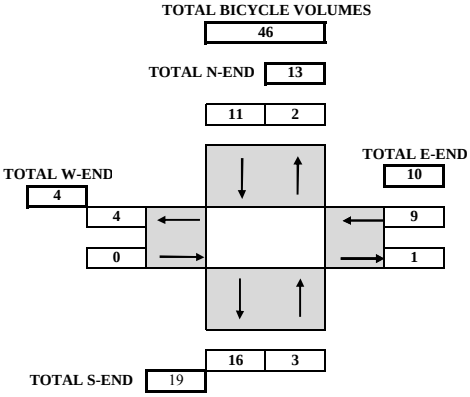
B.A.Y.M.E.T.R.I.C.S.

BICYCLE TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**	**DAY:**	**TUESDAY**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**SOUTH COSTCO DRIVEWAY (EXIT ONLY)**	**JURISDICTION:**	**SUNNYVALE**	**FILE:**	**3704032-7PM**

PEAK HOUR
4:00 PM to 5:00 PM





TIME From		PERIOD To	NORTHBOUND U-TURN	NORTHBOUND LEFT	NORTHBOUND THRU	NORTHBOUND RIGHT	SOUTHBOUND U-TURN	SOUTHBOUND LEFT	SOUTHBOUND THRU	SOUTHBOUND RIGHT	EASTBOUND U-TURN	EASTBOUND LEFT	EASTBOUND THRU	EASTBOUND RIGHT	WESTBOUND U-TURN	WESTBOUND LEFT	WESTBOUND THRU	WESTBOUND RIGHT	TOTAL
SURVEY DATA																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	**3**
4:30 PM	to	4:45 PM	0	0	2	0	0	0	4	3	0	0	0	0	0	7	0	0	**16**
4:45 PM	to	5:00 PM	0	0	2	1	0	0	7	4	0	0	0	0	0	9	0	0	**23**
5:00 PM	to	5:15 PM	0	0	2	1	0	0	7	5	0	0	0	0	0	10	0	1	**26**
5:15 PM	to	5:30 PM	0	0	2	1	0	0	8	5	0	0	0	0	0	11	0	1	**28**
5:30 PM	to	5:45 PM	0	0	2	1	0	0	13	7	0	0	0	0	0	16	1	1	**41**
5:45 PM	to	6:00 PM	0	0	2	1	0	0	14	8	0	0	0	0	0	21	1	1	**48**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0	**3**
4:30 PM	to	4:45 PM	0	0	1	0	0	0	4	2	0	0	0	0	0	6	0	0	**13**
4:45 PM	to	5:00 PM	0	0	0	1	0	0	3	1	0	0	0	0	0	2	0	0	**7**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	**3**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	**2**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	5	2	0	0	0	0	0	5	1	0	**13**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	1	1	0	0	0	0	0	5	0	0	**7**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	2	1	0	0	7	4	0	0	0	0	0	9	0	0	**23**
4:15 PM	to	5:15 PM	0	0	2	1	0	0	7	5	0	0	0	0	0	10	0	1	**26**
4:30 PM	to	5:30 PM	0	0	1	1	0	0	8	4	0	0	0	0	0	10	0	1	**25**
4:45 PM	to	5:45 PM	0	0	0	1	0	0	9	4	0	0	0	0	0	9	1	1	**25**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	7	4	0	0	0	0	0	12	1	1	**25**

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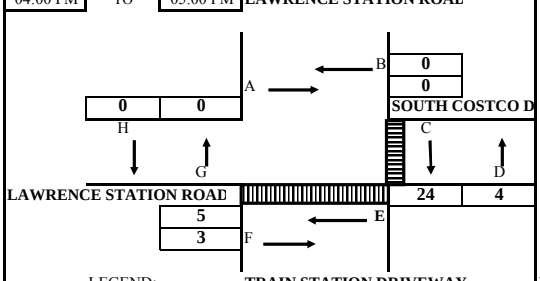
4:00 PM to 5:00 PM					
APPROACH VOLUME	NB	SB	EB	WB	TOTAL
BICYCLE	3	11	0	9	**23**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

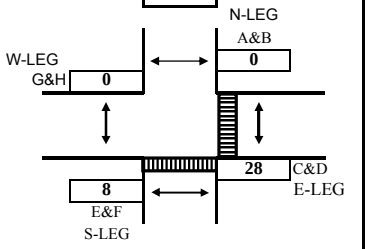
PROJECT:	**TRAFFIC COUNTS IN SUNNYVALE**	**SURVEY DATE:**	**5/9/2017**
N-S APPROACH:	**LAWRENCE STATION ROAD**	**DAY:**	**TUESDAY**
E-W APPROACH:	**SOUTH COSTCO DRIVEWAY (EXIT ONLY)**	**JURISDICTION:**	**SUNNYVALE**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3704032-7PM**

PEAK HOUR
04:00 PM TO 05:00 PM



LEGEND:
- CROSSWALK
- SIDEWALK
- STOP CONTROL LINE
- STOP

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES
36



BY LEG:	
N-LEG	**0**
S-LEG	**8**
E-LEG	**28**
W-LEG	**0**

BY DIRECTION:	
NB(D+G)	**4**
SB(C+H)	**24**
EB(A+F)	**3**
WB(B+E)	**5**

TIME PERIOD From		To	NORTH X-WALK *A*	*B*	EAST X-WALK *C*	*D*	SOUTH X-WALK *E*	*F*	WEST X-WALK *G*	*H*	*TOTAL*
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	2	1	0	0	0	0	***3***
04:15 PM	---	04:30 PM	0	0	8	2	3	2	0	0	***15***
04:30 PM	---	04:45 PM	0	0	20	4	4	3	0	0	***31***
04:45 PM	---	05:00 PM	0	0	24	4	5	3	0	0	***36***
05:00 PM	---	05:15 PM	0	0	26	6	5	3	0	0	***40***
05:15 PM	---	05:30 PM	0	0	28	7	5	4	0	0	***44***
05:30 PM	---	05:45 PM	0	0	43	7	7	4	0	0	***61***
05:45 PM	---	06:00 PM	0	0	51	7	9	4	0	0	***71***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	2	1	0	0	0	0	***3***
04:15 PM	---	04:30 PM	0	0	6	1	3	2	0	0	***12***
04:30 PM	---	04:45 PM	0	0	12	2	1	1	0	0	***16***
04:45 PM	---	05:00 PM	0	0	4	0	1	0	0	0	***5***
05:00 PM	---	05:15 PM	0	0	2	2	0	0	0	0	***4***
05:15 PM	---	05:30 PM	0	0	2	1	0	1	0	0	***4***
05:30 PM	---	05:45 PM	0	0	15	0	2	0	0	0	***17***
05:45 PM	---	06:00 PM	0	0	8	0	2	0	0	0	***10***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	24	4	5	3	0	0	***36***
04:15 PM	---	05:15 PM	0	0	24	5	5	3	0	0	***37***
04:30 PM	---	05:30 PM	0	0	20	5	2	2	0	0	***29***
04:45 PM	---	05:45 PM	0	0	23	3	3	1	0	0	***30***
05:00 PM	---	06:00 PM	0	0	27	3	4	1	0	0	***35***

Tel : (510) 232-1271 ***EMAIL: BAYMETRICS@GMAIL.COM***

12:00 AM to 12:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	4	24	3	5	**36**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	8	28	0	**36**

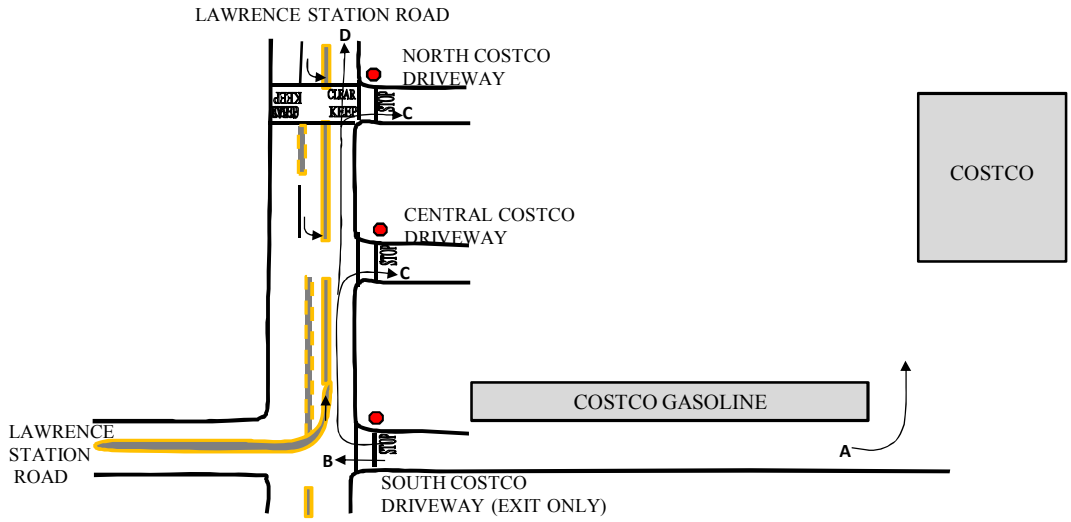
B.A.Y.M.E.T.R.I.C.S.

INTERNAL CIRCULATION SUMMARY

PROJECT:	TRAFFIC COUNTS IN SUNNYVALE	SURVEY DATE:	5/9/2017
N-S APPROACH:	LAWRENCE STATION ROAD	DAY:	TUESDAY
E-W APPROACH:	SOUTH COSTCO DRIVEWAY	JURISDICTION:	SUNNYVALE
SURVEY PERIOD	7:00 AM 9:00 AM	FILE:	3705035-AM

SUMMARY

PEAK HOUR	TO COSTCO PARKING (A)	TO LAWRENCE STATION RD (B)	BACK TO COSTCO ENTRANCE ©	TO KIFER ROAD (D)	TOTAL
######## TO ########	117	68	1	72	258



TIME PERIOD From	To	TO COSTCO PARKING A	TO LAWRENCE STATION RD B	BACK TO COSTCO ENTRANCE C	TO KIFER ROAD D	TOTAL
SURVEY DATA						
07:00 AM ---	07:15 AM	10	14	2	15	*41*
07:15 AM ---	07:30 AM	30	29	2	23	*84*
07:30 AM ---	07:45 AM	49	46	2	36	*133*
07:45 AM ---	08:00 AM	79	59	2	46	*186*
08:00 AM ---	08:15 AM	110	75	2	59	*246*
08:15 AM ---	08:30 AM	132	99	3	85	*319*
08:30 AM ---	08:45 AM	157	114	3	104	*378*
08:45 AM ---	09:00 AM	196	127	3	118	*444*
TOTAL BY PERIOD						
07:00 AM ---	07:15 AM	10	14	2	15	*41*
07:15 AM ---	07:30 AM	20	15	0	8	*43*
07:30 AM ---	07:45 AM	19	17	0	13	*49*
07:45 AM ---	08:00 AM	30	13	0	10	*53*
08:00 AM ---	08:15 AM	31	16	0	13	*60*
08:15 AM ---	08:30 AM	22	24	1	26	*73*
08:30 AM ---	08:45 AM	25	15	0	19	*59*
08:45 AM ---	09:00 AM	39	13	0	14	*66*
HOURLY TOTALS						
07:00 AM ---	08:00 AM	79	59	2	46	*186*
07:15 AM ---	08:15 AM	100	61	0	44	*205*
07:30 AM ---	08:30 AM	102	70	1	62	*235*
07:45 AM ---	08:45 AM	108	68	1	68	*245*
08:00 AM ---	09:00 AM	117	68	1	72	*258*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

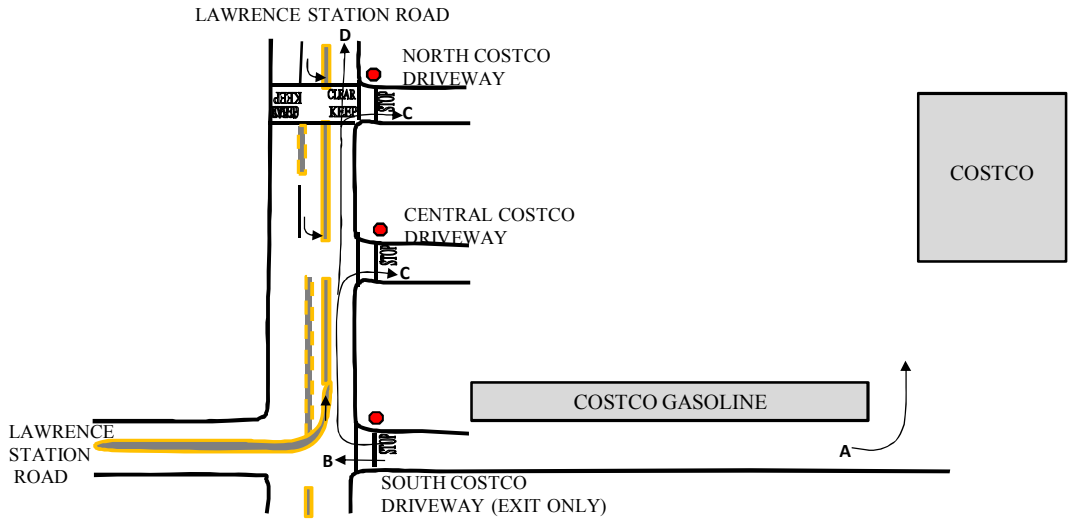
B.A.Y.M.E.T.R.I.C.S.

INTERNAL CIRCULATION SUMMARY

PROJECT:	TRAFFIC COUNTS IN SUNNYVALE	SURVEY DATE:	5/9/2017
N-S APPROACH:	LAWRENCE STATION ROAD	DAY:	TUESDAY
E-W APPROACH:	SOUTH COSTCO DRIVEWAY	JURISDICTION:	SUNNYVALE
SURVEY PERIOD	4:00 PM 6:00 PM	FILE:	3705035-PM

SUMMARY

PEAK HOUR	TO COSTCO PARKING (A)	TO LAWRENCE STATION RD (B)	BACK TO COSTCO ENTRANCE ©	TO KIFER ROAD (D)	TOTAL
04:15 PM TO 05:15 PM	154	93	3	62	312



TIME PERIOD From	To	TO COSTCO PARKING A	TO LAWRENCE STATION RD B	BACK TO COSTCO ENTRANCE C	TO KIFER ROAD D	TOTAL
SURVEY DATA						
04:00 PM ---	04:15 PM	28	38	0	13	***79***
04:15 PM ---	04:30 PM	70	61	1	15	***147***
04:30 PM ---	04:45 PM	99	84	1	43	***227***
04:45 PM ---	05:00 PM	138	105	2	59	***304***
05:00 PM ---	05:15 PM	182	131	3	75	***391***
05:15 PM ---	05:30 PM	216	148	3	82	***449***
05:30 PM ---	05:45 PM	249	183	3	94	***529***
05:45 PM ---	06:00 PM	289	199	3	101	***592***
TOTAL BY PERIOD						
04:00 PM ---	04:15 PM	28	38	0	13	***79***
04:15 PM ---	04:30 PM	42	23	1	2	***68***
04:30 PM ---	04:45 PM	29	23	0	28	***80***
04:45 PM ---	05:00 PM	39	21	1	16	***77***
05:00 PM ---	05:15 PM	44	26	1	16	***87***
05:15 PM ---	05:30 PM	34	17	0	7	***58***
05:30 PM ---	05:45 PM	33	35	0	12	***80***
05:45 PM ---	06:00 PM	40	16	0	7	***63***
HOURLY TOTALS						
04:00 PM ---	05:00 PM	138	105	2	59	***304***
04:15 PM ---	05:15 PM	154	93	3	62	***312***
04:30 PM ---	05:30 PM	146	87	2	67	***302***
04:45 PM ---	05:45 PM	150	99	2	51	***302***
05:00 PM ---	06:00 PM	151	94	1	42	***288***

Tel : (510) 232-1271 *Fax: (510) 232-1272*

ATTACHMENT 6

BAYMETRICS

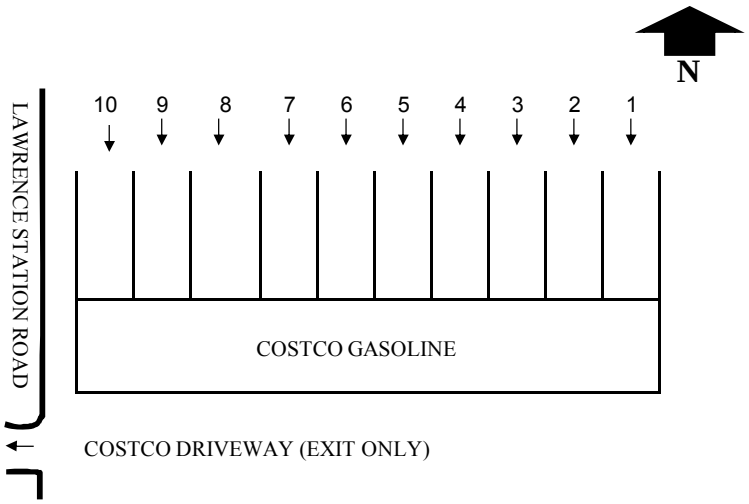
INTERSECTION DELAY (QUEUING) DATA SUMMARY

FILE: 3705035-QUEUE

PROJECT NAME:	COSTCO GASOLINE QUEUE STUDY	SURVEY DATE:	5/9/2017 (TUESDAY)
N / S STREET:	LAWRENCE STATION ROAD	SURVEY TIME:	7:00 AM TO 9:00 AM
E / W STREET:	COSTCO DRIVEWAY	JURISDICTION:	SUNNYVALE

APPROACHES: Pump Lane 1 2 3 4 5 6 7 8 9 10

SURVEY DATA



Pump Lane 1
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TIME			1 Minute				2Minute				3 Minute				4 Minute				5 Minute			
			:00	:15	:30	:45	:00	:15	:30	:45	:00	:15	:30	:45	:00	:15	:30	:45	:00	:15	:30	:45
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ATTACHMENT 6

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ATTACHMENT 6

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		10	3				2				1				2				2			

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		10													1				2			

TELEPHONE: (510) 232-1271 EMAIL: BAYMETRICS@GMAIL.COM

BAYMETRICS

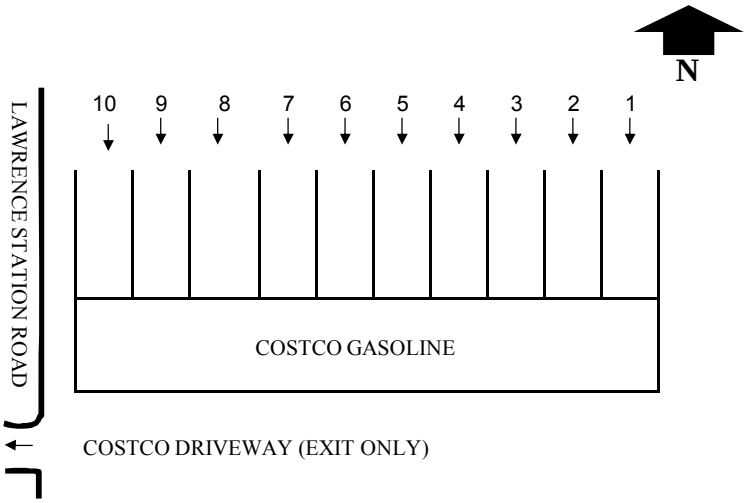
INTERSECTION DELAY (QUEUING) DATA SUMMARY

FILE: 3705035-QUEUE

PROJECT NAME:	COSTCO GASOLINE QUEUE STUDY	SURVEY DATE:	5/9/2017 (TUESDAY)
N / S STREET:	LAWRENCE STATION ROAD	SURVEY TIME:	7:00 AM TO 9:00 AM
E / W STREET:	COSTCO DRIVEWAY	JURISDICTION:	SUNNYVALE

APPROACHES: Pump Lane 1 2 3 4 5 6 7 8 9 10

SUMMARY



Pump Lane 1
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Time		Leg		15 Min Vehicles in Queue	Total Approach	Total Delay (sec) vehicles in queue x 60sec	15 Min Average Delay (sec) (Total delay/total approach + 5 sec stop & start time)
7:00 AM	to 7:15 AM	PUMP LINE	1	0	36	240	11.67
			2	0			
			3	0			
			4	0			
			5	0			
			6	1			
			7	0			
			8	1			
			9	1			
			10	1			
7:15 AM	to 7:30 AM	PUMP LINE	1	0	56	60	6.07
			2	0			
			3	0			
			4	0			
			5	0			
			6	0			
			7	0			
			8	1			
			9	0			
			10	0			
7:30 AM	to 7:45 AM	PUMP LINE	1	0	49	240	9.90
			2	0			
			3	0			
			4	0			
			5	1			
			6	0			
			7	0			
			8	1			
			9	0			
			10	2			

7:45 AM to **8:00 AM**	**PUMP LINE**	**1**	0	66	1140	22.27
		2	3			
		3	0			
		4	3			
		5	1			
		6	5			
		7	1			
		8	2			
		9	1			
		10	3			
8:00 AM to **8:15 AM**	**PUMP LINE**	**1**	0	56	600	15.71
		2	0			
		3	0			
		4	0			
		5	0			
		6	0			
		7	0			
		8	5			
		9	0			
		10	5			
8:15 AM to **8:30 AM**	**PUMP LINE**	**1**	14	86	10380	125.70
		2	16			
		3	8			
		4	21			
		5	18			
		6	21			
		7	10			
		8	18			
		9	21			
		10	26			
8:30 AM to **8:45 AM**	**PUMP LINE**	**1**	11	62	9420	156.94
		2	20			
		3	8			
		4	16			
		5	13			
		6	20			
		7	13			
		8	24			
		9	13			
		10	19			
8:45 AM to **9:00 AM**	**PUMP LINE**	**1**	4	63	3060	53.57
		2	3			
		3	2			
		4	5			
		5	3			
		6	4			
		7	3			
		8	12			
		9	6			
		10	9			

Time	Leg		Hourly Vehicles in Queue	Total Approach	Total Delay (sec) (vehicles in queue x 60sec	Hourly Average Delay (sec) (Total delay/total approach + 5 sec stop & start time)
7:00 AM to **8:00 AM**	**PUMP LINE**	**1**	0	207	1680	13.12
		2	3			
		3	0			
		4	3			
		5	2			
		6	6			
		7	1			
		8	5			
		9	2			
		10	6			

7:15 AM to **8:15 AM**	**PUMP LINE**	**1**	0	227	2040	13.99
		2	3			
		3	0			
		4	3			
		5	2			
		6	5			
		7	1			
		8	9			
		9	1			
		10	10			
7:30 AM to **8:30 AM**	**PUMP LINE**	**1**	14	257	12360	53.09
		2	19			
		3	8			
		4	24			
		5	20			
		6	26			
		7	11			
		8	26			
		9	22			
		10	36			
7:45 AM to **8:45 AM**	**PUMP LINE**	**1**	25	270	21540	84.78
		2	39			
		3	16			
		4	40			
		5	32			
		6	46			
		7	24			
		8	49			
		9	35			
		10	53			
8:00 AM to **9:00 AM**	**PUMP LINE**	**1**	29	267	23460	92.87
		2	39			
		3	18			
		4	42			
		5	34			
		6	45			
		7	26			
		8	59			
		9	40			
		10	59			

ATTACHMENT 6

BAYMETRICS

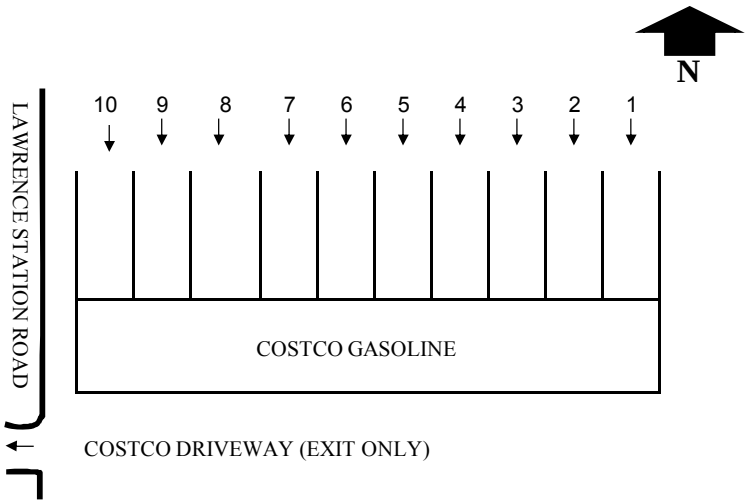
INTERSECTION DELAY (QUEUING) DATA SUMMARY

FILE: 3705035-QUEUE

PROJECT NAME:	COSTCO GASOLINE QUEUE STUDY	SURVEY DATE:	5/9/2017 (TUESDAY)
N / S STREET:	LAWRENCE STATION ROAD	SURVEY TIME:	4:00 PM TO 6:00 PM
E / W STREET:	COSTCO DRIVEWAY	JURISDICTION:	SUNNYVALE

APPROACHES: Pump Lane 1 2 3 4 5 6 7 8 9 10

SURVEY DATA



Pump Lane 1 2 3 4 5 6 7 8 9 10

Gas Pump Line Closed

TIME			1 Minute				2Minute				3 Minute				4 Minute				5 Minute			
			:00	:15	:30	:45	:00	:15	:30	:45	:00	:15	:30	:45	:00	:15	:30	:45	:00	:15	:30	:45
4:00 PM	PUMP LINE	1	1				1								2				1			
		2	1								1								2			
		3	1				1				2				2							
		4					1				1				1				1			
		5	2								1								1			
		6	1				1								2				2			
		7					2				2				2				1			
		8	2				1				1				1				2			
		9									1				1							
		10	1				1				1				1							
4:05 PM	PUMP LINE	1									2											
		2	2				1								1				1			
		3									1											
		4	2				2								1							
		5	1				1															
		6	2				2												1			
		7									2								1			
		8	1				1								1				1			
		9	1				1				1											
		10	2				2												1			
4:10 PM	PUMP LINE	1																	2			
		2									1											
		3									1				1				1			
		4					1				1				1							
		5									1				1				1			
		6					1				2								1			
		7									1				1				1			
		8	1								1				1							
		9													1							
		10	1				1				2											

ATTACHMENT 6

4:15 PM		**1**																				
		2	1				1				1											
		3	1								1				1							
		4	1								2				1				1			
	PUMP	**5**	1												2				1			
	LINE	**6**	1								2				2							
		7					1				2				1							
		8					1				2								2			
		9	1				2				2				2				1			
		10	2				2				2				1				2			
4:20 PM		**1**					1								1							
		2	1				1				2				2				1			
		3									1											
		4	1				1								1				2			
	PUMP	**5**	1																1			
	LINE	**6**	1				2				1				1				2			
		7	1				2				2				1				1			
		8					1				1								2			
		9	1				2				2											
		10	2				1												1			
4:25 PM		**1**	2				1												1			
		2	1				1								1				1			
		3	2				2								1				1			
		4	1								1				1				2			
	PUMP	**5**													2				2			
	LINE	**6**	1				1				1								1			
		7	1				1				1				1				1			
		8	1				3				1				1				2			
		9	1				1				1				2				1			
		10	1				2				2				3				3			
4:30 PM		**1**	1																2			
		2	2				2				2				1				2			
		3					1				1				1				1			
		4	1				2				2				2				2			
	PUMP	**5**	2								1				1				1			
	LINE	**6**	2				2				2				2				2			
		7					2				2				2				2			
		8	3				2				2				2				2			
		9					1				1				1				2			
		10	4				5				3				3				2			
4:35 PM		**1**	1																			
		2	3				2				1				2				2			
		3													1				1			
		4	3				1				2				1				1			
	PUMP	**5**					1				1								1			
	LINE	**6**	2				2				2								1			
		7					1				1				2				1			
		8	3				2				2				2				1			
		9	3				2				1				1				1			
		10	3				3				3				1				1			
4:40 PM		**1**					1															
		2									1								2			
		3									2				1							
		4	1								1				1				1			
	PUMP	**5**	1				1				1											
	LINE	**6**	1				2				1				1				1			
		7									1				1				1			
		8	2				2				1				2				2			
		9	2				1								1				1			
		10	1				2				1				1				2			
4:45 PM		**1**					1				1								1			
		2	2				2				1				1				1			
		3									1				1				1			
		4	1				1				2				1				1			
	PUMP	**5**	1				1				2				1				2			
	LINE	**6**	2				1				2				2				2			
		7	1				1				1				1				1			
		8	1				2				3				2							
		9	1								2								2			
		10	2				1				3				2				2			

ATTACHMENT 6

4:50 PM		**1**	1				1															
		2	2				2				1				3				1			
		3																				
		4	2				2				1								2			
	PUMP	**5**	1				1								1							
	LINE	**6**	2				2				2				2				2			
		7	1				1								2				2			
		8	3				3				2								2			
		9	2				2				2								1			
		10	2				2				1				2				2			
4:55 PM		**1**									1				1							
		2	1								2				2							
		3									1											
		4	1				2				1				1				1			
	PUMP	**5**									1											
	LINE	**6**	1				1				2				2				2			
		7	2				2				1				1				1			
		8	2				2															
		9	1				1				2				1				1			
		10	1				2				2				1							
5:00 PM		**1**					1															
		2					2				1				1							
		3	1				1															
		4	1								1											
	PUMP	**5**																				
	LINE	**6**	1				1				1				1							
		7	1				1				1				1				1			
		8	1								2				2							
		9	1				1								1				2			
		10	1				1				1				1							
5:05 PM		**1**																				
		2									1				1				2			
		3																	2			
		4					1				2				2				2			
	PUMP	**5**									2				2				2			
	LINE	**6**					1				3				1				3			
		7					1				2				2				2			
		8	1				2				2				2				2			
		9	1				1				2				2				3			
		10	1				2				2				3				3			
5:10 PM		**1**																				
		2	1				1				1				3				2			
		3					2				2				2				2			
		4	2				1				2				1				2			
	PUMP	**5**					1				2				1				1			
	LINE	**6**	3				2				3				3				3			
		7	1				2				2				2				1			
		8	2				2				3				3				3			
		9	3				3				4				2				2			
		10	2				2				3				3				2			
5:15 PM		**1**																				
		2	2				2				1				1				2			
		3	2				1				2				3				2			
		4	2				2				2				2				1			
	PUMP	**5**	2				2				2				2				2			
	LINE	**6**	3				1				2				2				2			
		7	1				2				2				3				3			
		8	3				2				3				3				4			
		9	3				3				2				3				3			
		10	2				3				3				2				2			
5:20 PM		**1**																				
		2	2								1				1				2			
		3	2				2				2				2				2			
		4	1				1				2				1							
	PUMP	**5**	1				1				2				2							
	LINE	**6**					1				2				3				1			
		7	2				1				1				2				2			
		8	3				2				2				2							
		9	1				1				2				2				2			
		10	2				2				3				2				4			

5:25 PM		1									1								1		
		2																			
		3					1				2								1		
		4					1				1								1		
	PUMP	5	1				1				2								1		
	LINE	6					1				2								2		
		7									1				1				1		
		8	2				2				2				2						
		9	2				1				2				1				1		
		10	2				2				2				2				1		
5:30 PM		1									1				1				1		
		2																			
		3													1				2		
		4	2				2								2				2		
	PUMP	5	1				2								2				2		
	LINE	6	2				2				2				3				3		
		7	1				1				1				1				1		
		8	2				3				3				2				2		
		9	1				2				1				2				1		
		10	1								2				2				2		
5:35 PM		1					1				1				2						
		2																			
		3	1								2				1						
		4	2				1				1				2				2		
	PUMP	5	2				1				2				1				1		
	LINE	6	3				1				1				2				1		
		7	2				2				2				3				2		
		8	3				2				2				3				2		
		9	2				1				2				2				2		
		10	3				3				1				3				3		
5:40 PM		1	1				2				2				1				2		
		2													1				3		
		3	1				2				2										
		4	2				2				3				3				3		
	PUMP	5	1				3				4				3				2		
	LINE	6	2				4				4				2				1		
		7	2				3				1				1				1		
		8	2				3				3				2				2		
		9	2				2				1				1				1		
		10	3				1				2				2				2		
5:45 PM		1	1				1				1				1						
		2	3				1				2				2				1		
		3	1				1				1								1		
		4	4				2				2				3				1		
	PUMP	5	3				3				2				1				1		
	LINE	6	4				4				1				1				2		
		7	1				1				1				1				1		
		8	3				3				2				2				2		
		9	1				1				1								1		
		10													1				1		
5:50 PM		1									1										
		2	1				1														
		3	1				1														
		4	1				2														
	PUMP	5	1				1				2				1				1		
	LINE	6	2				1								2				2		
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		9	1				1								1				1		
		10	2				2								1				1		
5:55 PM		1																			
		2					1														
		3									1										
		4	1				1												1		
	PUMP	5	1								1										
	LINE	6																			
		7	1								1										
		8	1				1														
		9	1				1														
		10	1				1				1										

TELEPHONE: (510) 232-1271 EMAIL: BAYMETRICS@GMAIL.COM

B A Y M E T R I C S

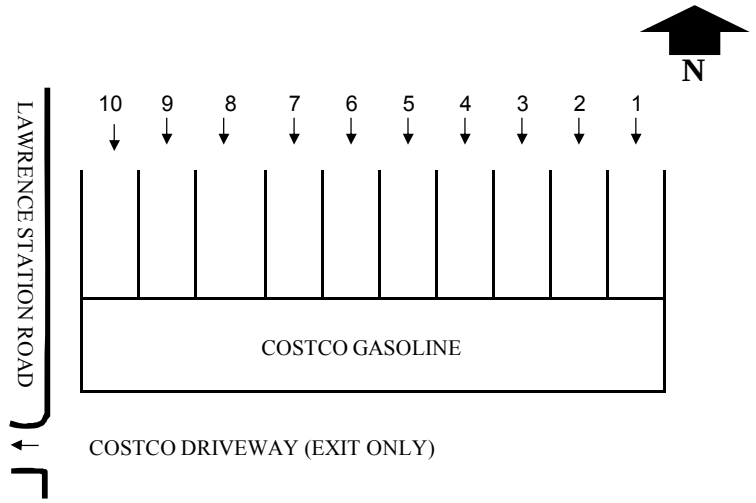
INTERSECTION DELAY (QUEUING) DATA SUMMARY

FILE: 3705035-QUEUE

PROJECT NAME:	COSTCO GASOLINE QUEUE STUDY	SURVEY DATE:	5/9/2017 (TUESDAY)
N / S STREET:	LAWRENCE STATION ROAD	SURVEY TIME:	4:00 PM TO 6:00 PM
E / W STREET:	COSTCO DRIVEWAY	JURISDICTION:	SUNNYVALE

APPROACHES: Pump Lane 1 2 3 4 5 6 7 8 9 10

SUMMARY



Pump Lane 1
2
3
4
5
6
7
8
9
10

Time		Leg		15 Min Vehicles in Queue	Total Approach	Total Delay (sec) vehicles in queue x 60sec	15 Min Average Delay (sec) (Total delay/total approach + 5 sec stop & start time)
4:00 PM	to 4:15 PM	PUMP LINE	1	9	57	6660	121.84
			2	10			
			3	10			
			4	12			
			5	9			
			6	15			
			7	13			
			8	14			
			9	6			
			10	13			
4:15 PM	to 4:30 PM	PUMP LINE	1	6	78	8820	118.08
			2	14			
			3	10			
			4	15			
			5	10			
			6	16			
			7	16			
			8	17			
			9	19			
			10	24			
4:30 PM	to 4:45 PM	PUMP LINE	1	5	66	11400	177.73
			2	22			
			3	9			
			4	21			
			5	11			
			6	23			
			7	16			
			8	30			
			9	18			
			10	35			

4:45 PM to **5:00 PM**	**PUMP LINE**	**1**	7	66	10320	161.36
		2	21			
		3	4			
		4	19			
		5	11			
		6	27			
		7	18			
		8	22			
		9	18			
		10	25			
5:00 PM to **5:15 PM**	**PUMP LINE**	**1**	1	81	11100	142.04
		2	16			
		3	12			
		4	17			
		5	11			
		6	26			
		7	20			
		8	27			
		9	28			
		10	27			
5:15 PM to **5:30 PM**	**PUMP LINE**	**1**	2	58	12600	222.24
		2	14			
		3	24			
		4	17			
		5	23			
		6	28			
		7	16			
		8	23			
		9	29			
		10	34			
5:30 PM to **5:45 PM**	**PUMP LINE**	**1**	15	75	13980	191.40
		2	4			
		3	12			
		4	29			
		5	27			
		6	33			
		7	24			
		8	36			
		9	23			
		10	30			
5:45 PM to **6:00 PM**	**PUMP LINE**	**1**	5	47	7980	174.79
		2	12			
		3	7			
		4	18			
		5	18			
		6	19			
		7	13			
		8	20			
		9	10			
		10	11			

Time	Leg		Hourly Vehicles in Queue	Total Approach	Total Delay (sec) (vehicles in queue x 60sec	Hourly Average Delay (sec) (Total delay/total approach + 5 sec stop & start time)
4:00 PM to **5:00 PM**	**PUMP LINE**	**1**	27	267	37200	144.33
		2	67			
		3	33			
		4	67			
		5	41			
		6	81			
		7	63			
		8	83			
		9	61			
		10	97			

4:15 PM to **5:15 PM**	**PUMP LINE**	**1**	19	291	41640	148.09
		2	73			
		3	35			
		4	72			
		5	43			
		6	92			
		7	70			
		8	96			
		9	83			
		10	111			
4:30 PM to **5:30 PM**	**PUMP LINE**	**1**	15	271	45420	172.60
		2	73			
		3	49			
		4	74			
		5	56			
		6	104			
		7	70			
		8	102			
		9	93			
		10	121			
4:45 PM to **5:45 PM**	**PUMP LINE**	**1**	25	280	48000	176.43
		2	55			
		3	52			
		4	82			
		5	72			
		6	114			
		7	78			
		8	108			
		9	98			
		10	116			
5:00 PM to **6:00 PM**	**PUMP LINE**	**1**	23	261	45660	179.94
		2	46			
		3	55			
		4	81			
		5	79			
		6	106			
		7	73			
		8	106			
		9	90			
		10	102			

Appendix H
Existing PM Peak Hour Worst-Case Fuel Station Queueing

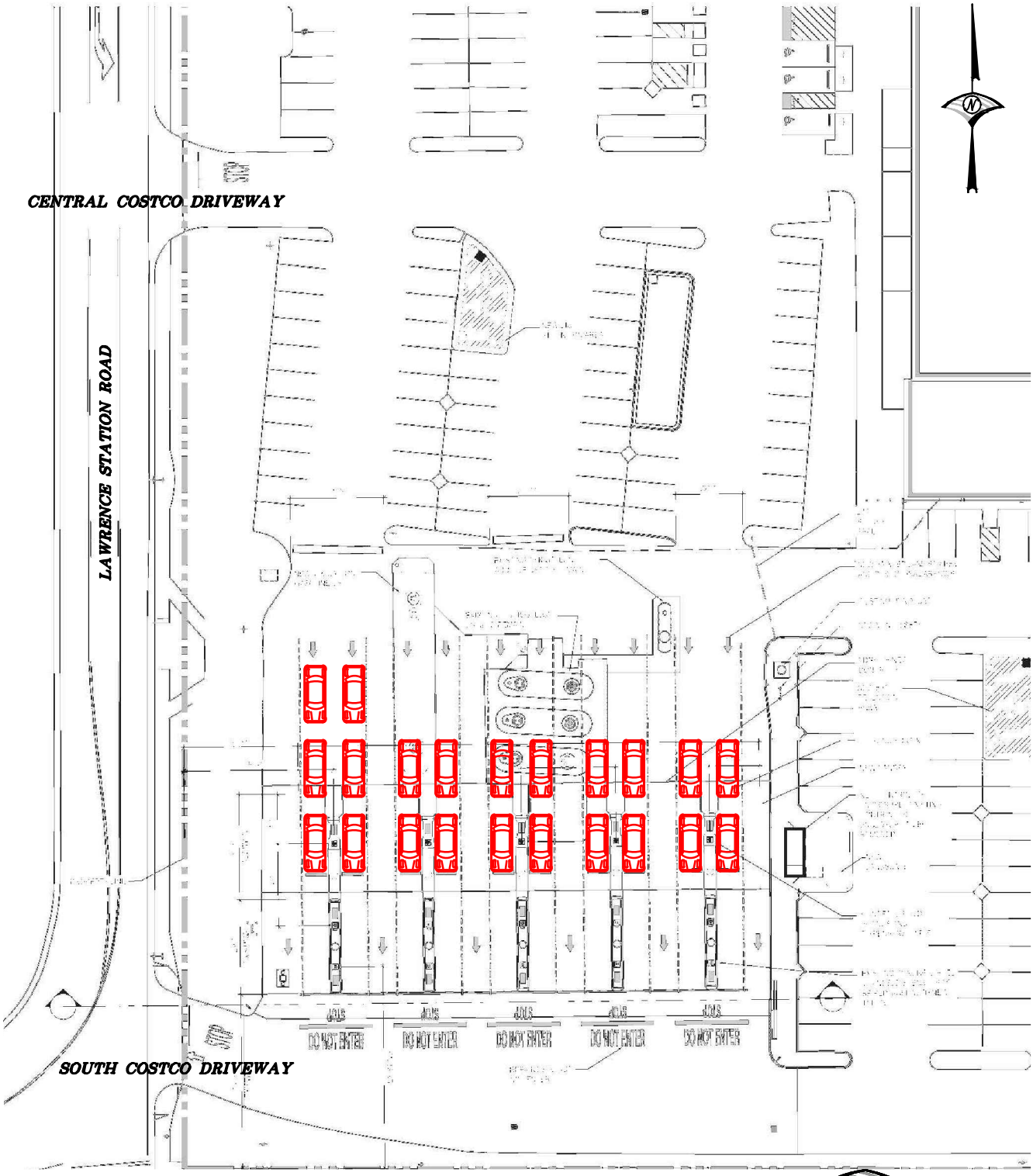
APPENDIX H

EXISTING PM PEAK HOUR WORST-CASE FUEL STATION QUEUING

150 LAWRENCE STATION ROAD TRAFFIC OPERATIONS ANALYSIS

SUNNYVALE, CALIFORNIA

SEPTEMBER, 2017



0 25 50 100

SCALE:1"= 50'

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
4670 WILLOW ROAD, STE 125 TEL 925.847.1556
PLEASANTON, CA 94588 FAX 925.847.1557

J:\Jobs\8642_Sunnyvale\002_150_Lawrence_Station_TIA\Traffic\Reports\Appendix_H_Exist_Queue_Diagram.dwg 9/18/2017 2:02 PM Nicole Scappaticci

Appendix I
“Plus Project” PM Peak Hour Worst-Case Fuel Station Queueing

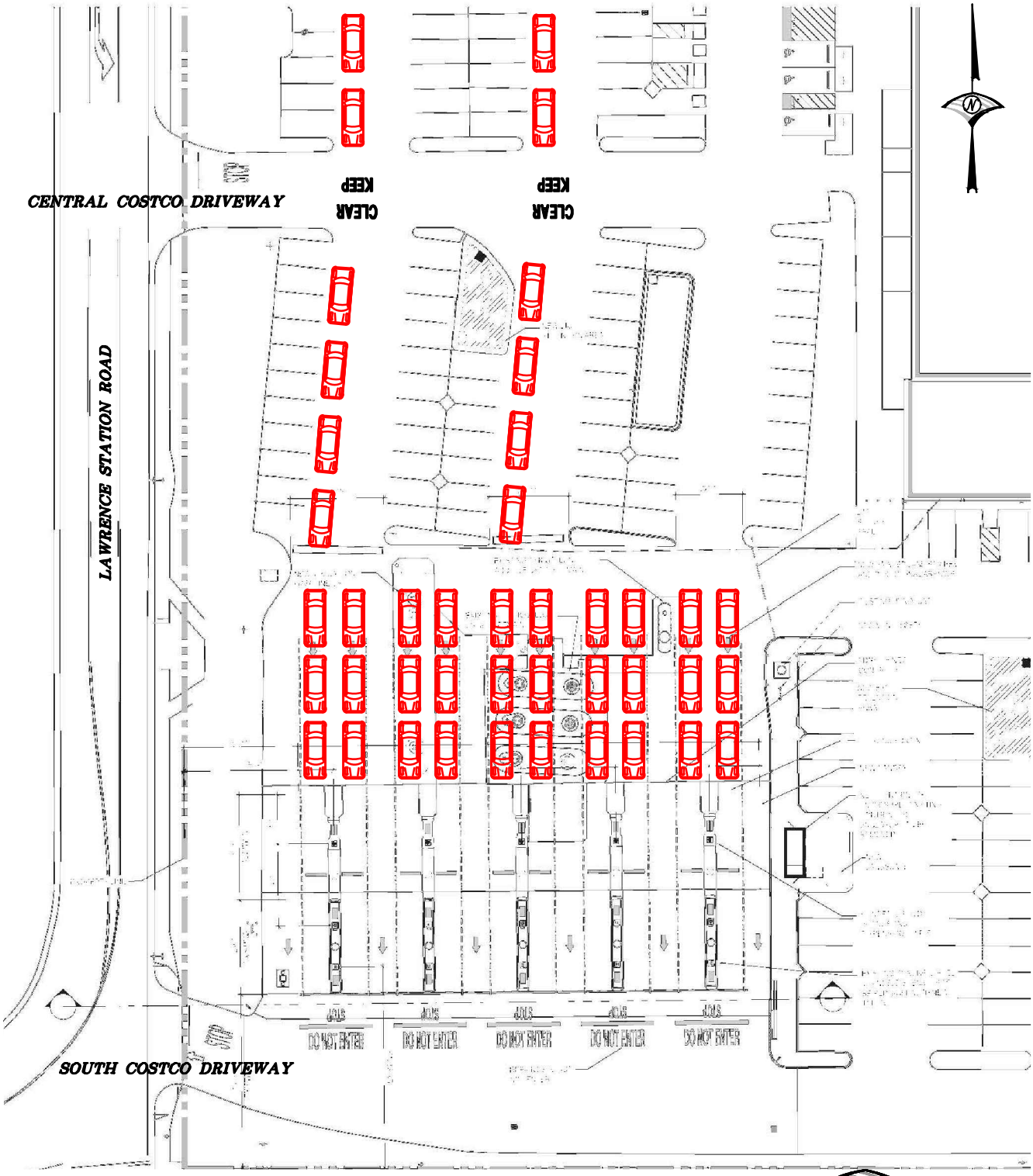
APPENDIX I

"PLUS PROJECT" PM PEAK HOUR WORST-CASE FUEL STATION QUEUING

150 LAWRENCE STATION ROAD TRAFFIC OPERATIONS ANALYSIS

SUNNYVALE, CALIFORNIA

SEPTEMBER, 2017



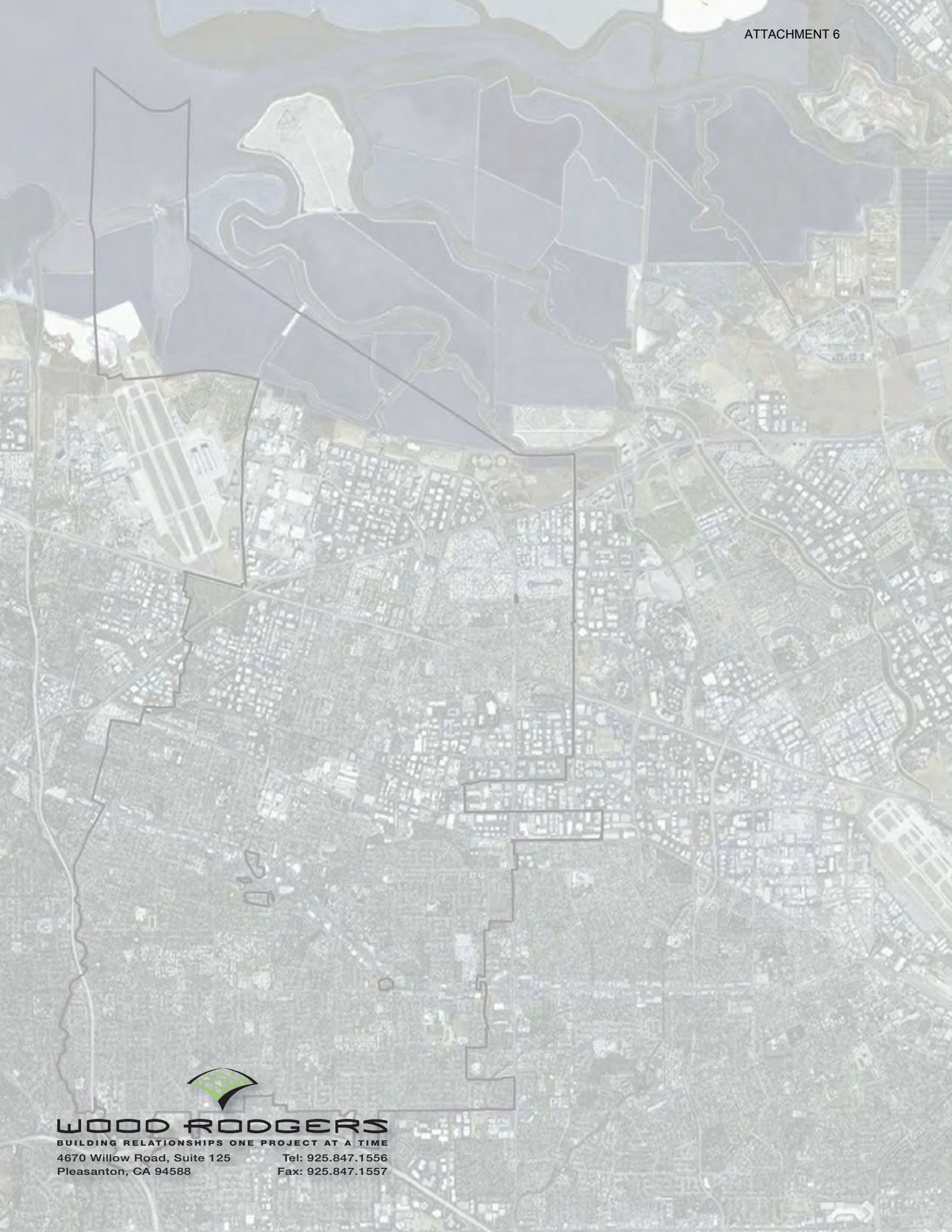
0 25 50 100

SCALE:1"= 50'

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
4670 WILLOW ROAD, STE 125 TEL 925.847.1556
PLEASANTON, CA 94588 FAX 925.847.1557

J:\Jobs\8642_Sunnyvale\002_150_Lawrence_Station_TIA\Traffic\Reports\Appendix_I_plus_Project_Queue_Diagram.dwg 9/18/2017 3:26 PM Nicole Scappaticci

ATTACHMENT 6



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
4670 Willow Road, Suite 125
Pleasanton, CA 94588
Tel: 925.847.1556
Fax: 925.847.1557